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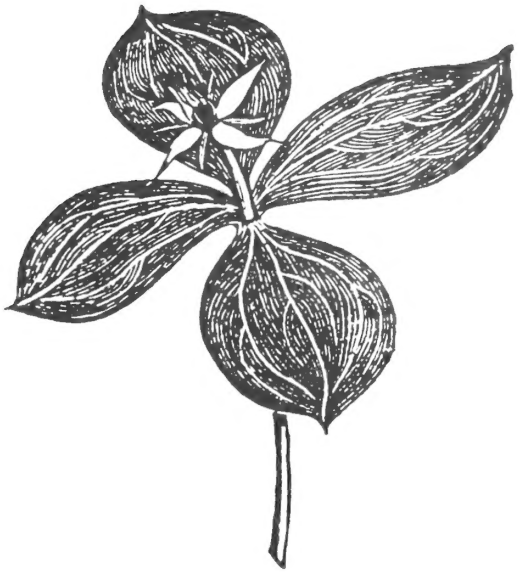

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THE READING NATURALIST

No 47 for the year 1994

The Journal of the

Reading and District Natural History Society

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EDITORIAL

Having gained some experience in my first year as editor I have found the task easier this year, and I am pleased that I have not had to call on others to help me. I must thank all those who have contributed articles and reports for sending me their copy promptly and wherever possible on computer disks. Particularly I must thank Alan Brickstock who, despite illness, sent me his Report for Fungi and the summary of Wednesday afternoon walks in very good time. Thanks also to my wife for helping to check my typing so that the many errors could be corrected before the final copy !

It would be appreciated by the Recorders if observations could be sent to them, at the latest, by the middle of January to allow them to complete their Reports in good time for editing.

I had hoped that there would have been more articles from members and I am most grateful to Alan Burt for his contribution and to Kit Brownlee and Graham Scholey for the summary of the talk on Otters. As there are many very good lectures given to the Society perhaps such summaries should become a regular feature in the Naturalist. Would any member be prepared to take notes and, if agreed by the lecturer, to provide such summaries ?

The institutions and societies to whom complimentary copies of the Naturalist are sent were reviewed last year and some additions were made, also a few deletions. It was most welcome to hear from some of the new recipients that our records are both interesting and useful to them. More members sent observations to the Recorders than last year, I hope it is a trend which will continue for it is clear that our records are of value to organisations beyond the immediate area around Reading.

Primroses flowering in November, daffodils in bloom and bumble-bees on the wing in January; the result of an extremely mild, also very wet, autumn and winter ? What unusual observations will there be in the coming months ? Please send them to the Recorders so that the effects of such exceptional weather may be assessed.

EXCURSIONS

Renée Grayer

Winter 1993-1994

The winter excursions started with a fungus foray led by Paul Cook on 17th.October. In the morning Earls Wood was explored by 15 members and 57 species of fungi were recorded, whereas 23 people attended the afternoon walk at Kingwood Common, where 64 species were counted. The second excursion to Bramshill Plantation was equally well attended despite the rather gloomy weather (18 people). This was a tree walk expertly led by Jocelin Whitfield. Thirty-one different species of tree were recorded, and the trip was thoroughly enjoyed by all participants who felt that this type of excursion should be held more often. The president of the Botanical Society of the British Isles had sent an invitation to the members of our society to attend their annual exhibition meeting, which was held this year at Reading University. I spotted at least eleven of our members between the many visitors looking at all the interesting displays. The next two trips were for the bird watchers of the society, led by Martin Sell. On 11th. December, a cold but beautiful day, 12 people assembled at the Fox and Hounds Pit, Theale. Kingfishers were observed, and two male goldeneyes. We were not so lucky with the weather on 15th. January (cold and rainy), but there was a good view of a little auk from the IBM headquarters. Again a goldeneye and the usual waders. On 20th. February 6 people braved the elements to admire the snowdrops at Welford Park. The leader was Meryl Beek. The traditional annual mosses and liverworts excursion expertly led as usual by Dr. Watson in the Goring area was attended by some eight people.

Summer 1994

It poured with rain on the first "summer" excursion of the season on 9th. April to Hambledon, led by Sheila Ward. However, we were rewarded by the sight of many spring plants in flower, including four species of violet, primrose, cowslip, sloe and even some greater stitchwort and bluebells so early in the season. On 23rd. April 14 adults and 3 children went for a long walk in the Remenham area, where Beryl Horswell showed us the specialities along the Thames, including superb Loddon lilies, marsh marigolds, and bittercress in bud. Further highlights were meadow saxifrage, orange tip and peacock butterflies, and two kingfishers flying over the Thames. We also heard cuckoo, willow warbler and chiffchaff. On 8th. May Martin Sell guided two groups of people around Theale Gravel Pits, since this was a joint excursion with BBONT. A cuckoo was heard and kingfishers and the usual waders were observed. Another highlight was a sighting of roe deer. A downpour on 21st. May reduced the number of participants visiting Hartslock. Thus only some eight hardy members led by Chris Raper saw the many interesting plants in this nature reserve. Thirteen members and two visitors attended the next trip to Stanford Dingley on 5th. June, led by Seán O'Leary. Many plant species were seen, the most unusual ones being monkshood and marestail. We spent quite some time at the extraordinary Blue Pool, watching the springs gushing up from the depths.

The annual coach trip was on 18th. June this year, to Wicken Fen and the Devil's Dyke. Thirty-four people went there by coach and one more by car. One of the wardens gave us a short talk about the natural history of Wicken Fen, and then everybody dispersed over the vast wetland area. The photographers were especially attracted by huge specimens of early and southern marsh orchids and the rare marsh pea. Brookweed and pink water speedwell were other unusual finds. Insects found included a very beautiful poplar hawkmoth. In the afternoon the coach took us to Devil's Dyke, where we had a short but very windy walk along the ridge with its rich flora.

John and Brenda Marshall kindly gave us the use of their garden for the annual Barbecue and Mothing night held on 1st. July. Meryl Beek took care of the food this year, and Brian Baker as usual identified the moths. The thirty members present had to hurry inside when a thunderstorm threatened to spoil the evening. However, it cleared later, and no less than 60 species of moth were counted.

On 6th July Colin and Renée Grayer led a group of 10 people around Bramshill Plantation. Halfway round we were once again caught in an enormous shower. Nevertheless, it was worth getting wet since we found a number of unusual plants, including least cudweed, water purslane and yellow bartsia, which is very rare in our area. On the way back a roe deer buck crossed our path. During the next three excursions the weather was hot and dry. Fifteen adults and one child attended a successful tour around Aston Upthorpe on 16th. July led by Phil Staines. At first we thought that there were few Lepidoptera

around, but soon we saw commas, ringlets, gatekeepers, marbled whites, small skippers, chalkhill and common blues and cinnabar moths, plus seventy species of chalk plants in flower. The number of plants and butterfly species we saw along the Basingstoke Canal, led by Ken Grinstead on 30th. July, was equally high. Further highlights during the trip were the sight of two dabchicks with their young, and because the canal was so clear you could even see them swimming under the water. Thirteen people attended this meeting. Carol Winder was the leader of another successful trip to Owlsmoor on 13th. August. We admired the sundews and a large number of damsel and dragonflies in the boggy area, some of which were laying their eggs.

Unfortunately the excursion to Dinton Pastures on 3rd. September was spoiled by a downpour. We hope that Graham Saunders can show us the bats there some other time.

The 1993/4 season was brought to a close by a fungus foray on 18th. September. This was expertly led by Alan Brickstock to Bowsey Hill where 65 species were recorded and Maidenhead Thicket where we saw 46 species of fungi. This excursion was joint with the Reading Fungus Group, and a record number of 53 people attended.

WEDNESDAY AFTERNOON WALKS

Alan Brickstock

We again had a series of six highly enjoyable walks organised and led by Ken Thomas, with his usual interesting comments and anecdotes on local history and architecture as a bonus.

We commenced in April with a walk round Sonning Common and Rotherfield Greys. A record turn-out of 14 members found 76 species of plants, a very good total for this early in the year.

The May walk was through attractive country round Aldworth and Westridge Green.

For the June walk round Finchampstead Ridges and along the River Blackwater and chain of lakes, we had a superb sunny day, with 89 species of plants, but sadly only 5 people.

The July walk at Marlston attracted only 7 people, who were temporarily diverted from things botanical by watching a calf being born, but 93 species of plants were found.

The August outing to Ruscombe was on a cool, heavily overcast, windy day, but pleasant for walking. This walk was notable for the superb record total of 125 species of plants.

The September walk round Rotherwick included some very attractive old woodlands, in which we found 37 species of fungi. Added to the 72 species of plants, this again gave us a 'ton', to Ken's great delight.

How about a few more people joining our walks in 1995 ? None of these walks are overlong, or very arduous, and are always much enjoyed by those who do turn up. Let's see some more of you please !

MEETINGS

Meryl Beek

The programme has followed the usual pattern of fortnightly lectures in the Abbey Room, Reading Central Library. Although attendance at the meetings has been disappointing on some occasions, the standard of the lectures has been very high.

On 28th. October (21 present) Des Sussex gave an account of the work of the Bracknell Countryside Service, with its 40 sites and main centre at "The Lookout".

This was followed on 11th November (46 present) with Phil Collins' lecture on "The Ice Age and beyond in the Kennet Valley", with an academic but easy to follow explanation of his work in the Woolhampton area.

25th. November was an interesting evening (28 present) when historian, Luke Over, talked on "The Romantic Swan in Legend and History". Facts about these royal birds abounded, ranging through biological and historical to details of general interest.

On 13th. January, Bryan Thomas, a British teacher on exchange in New Zealand, gave a short introduction to "New Zealand's Natural History" (48 present).

Jeff Taylor's "Wildlife in the English Countryside" was a photographic treat, with stunning shots of birds with "light" in their eyes to display their characters (30 present).

48 members heard Ian Richardson's lecture on 10th. February entitled "Wild Plants of Morocco". Ian is a plant taxonomist and he illustrated the great variety of habitats in Morocco from calcareous cliffs to wooded valleys and arid areas, He spoke of the history of some plants from 65 million years ago to the present time.

24th. February heralded an outstanding lecture by Andrew Halstead entitled "An Entomologist at Wisley" (35 present). Gardener's problems from aphids and scale insects to gall mites, beetles and butterflies were all investigated.

On 10th. March, Andrew Scholey spoke to 51 people on "Otters", British mammals which many members present at the meeting had never seen in the wild.

In addition, two Members Evenings have been held. On 9th. December (39 present) Kit Brownlee gave a talk on "Moulds", whilst on 24th. March Chris Raper spoke on the Hartslock Reserve and Alan Burt on the source of the River Pang in February 1994 (35 present).

Brian Baker, as Winter Programme Secretary, is thanked for arranging this excellent programme, which all present enjoyed very much.

MEMBERSHIP

At the Annual General Meeting in October a well deserved Honorary Membership of the Society was accorded to Hugh Carter.

Hugh joined the staff of Reading Museum and Art Gallery in 1959 and shortly afterwards became a member of our Society. Thus began a long period of valuable service for which he was honoured with the Presidency in 1972-73 and 1973-74. For over 30 years he has served as Honorary Recorder for Vertebrates and in very recent years, additionally, as Honorary Recorder for Invertebrates other than Insects.

His interesting contributions to The Reading Naturalist have been many and varied but one of lasting value to all members appeared in 1989. It is tucked away in the back of No. 41 but deserves greater prominence, its title - "Index to Reading Naturalist Volumes 1 to 40 ".

The treasurer reported that there were 162 members of the Society.

Names of members who joined in 1993, who were not included last year, and in 1994 are given below.

!993

Andrea Bishop
Dorothy Hartridge
Mr Fred Raynor
Mr Jeremy Sharp

1994

Mr Rod D'Ayala
Mr S. Popovic
Mrs Marian Webb
Mrs Sylvia Blackmore
Sally Rankin
Carol Winder
Mr John Langdon
Mr Michael Shendon
Louise Wolfenden
Sheila Martin
Mr Ron Thomas
Jane Mason
Mr R. A. and Mrs P. E. Walker

We are sorry to lose Doctors William and Doreen Tampion, long-time members of the Society, who have moved away from Reading.

MOSSES, WHERE AND WHY

Presidential Address, 13 October 1994

Michael Fletcher

INTRODUCTION

The Reading area has been well served by bryologists. Records were made by Druce, around Oxford, in the late nineteenth century. The late Eustace Jones published a bryophyte flora of Oxfordshire and Berkshire in 1952. Above all, Dr. Watson, while at Reading University, published his British Mosses and Liverworts, the book which has done more than any other to make these plants more popular and better known. He has also over the years given talks on these plants and led an annual moss excursion for our members in March. An interest in bryophytes continues at Reading University. As a result, most members of our Society know that mosses are small, boring and unimportant, and that one talk in about ten years is enough. It is now over ten years since this Society heard a talk on mosses.

I am going to show some rather poor pictures of my own, and some borrowed from the collections held by the British Bryological Society. However I am not going to talk primarily about the plants themselves, but about where they grow and why they grow there. If I add that my main source is the Atlas of British Bryophytes, which contains no pictures and little text, this may sound an unexciting prospect. This work, referred to - almost reverentially - by bryologists as "The Atlas", is in three volumes, containing over 1,000 maps, in which the distribution of every bryophyte known in the British Isles is mapped on a 10 kilometre grid. It is the result of many years of dedicated labour by the comparatively small number of people who have sufficient knowledge of these plants. Though such a work can never be complete, no other country in the world has yet been mapped in such detail, or with such thoroughness.

WHY ? A NOVEL THEORY

First is a map (Figure 1) showing the distribution of *Dicranella crispa*. It is not a very distinctive plant, but it can be seen at once that it is not common. It shows no clear preference for the mountains, nor the lowlands, nor the north, the south, the east or the west. However its distribution, otherwise random, shows one remarkable feature. This species has a great fondness for growing in lines.

The bulk of the records lie along a line connecting the Tower of London with the standing stones of Callenish in the outer Hebrides, which are one of the world's greatest megalithic monuments. There is a second set of records along a parallel line joining Holy Island to the stones near Altnaharra in Caithness. It may therefore be deduced that this moss grows along ley lines, lines of psychic power joining ancient sites of great spiritual or historical significance. The three records in Northern Ireland and the three in Cornwall each also lie nearly along a line.

I offer this explanation to ward off incipient drowsiness. However, before scoffing too loudly we should remember that there are many people, perhaps millions, who take such New Age ideas seriously. The history of science is littered with failed or ridiculous theories and ideas. Of the six questions in the English language, "where, what, who, when, how and why", the question "why" is often the most difficult and interesting, and has prompted some of the most spectacular and novel theories.

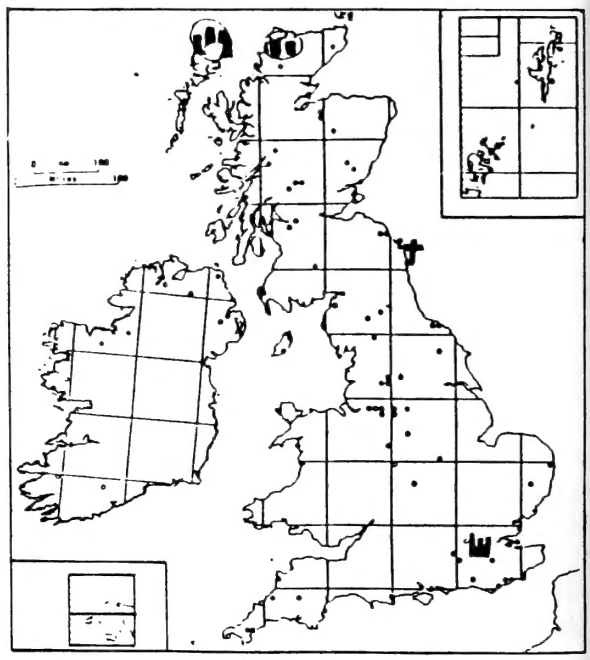

Figure 1
Distribution of *Dicranella crispa*

I intend to talk about why mosses grow where they do. I hope that some of my comments on the reasons will be of more general interest, since they may apply to other plants and animals. I will say no more about ley lines, except to point out that this apparently unscientific idea is actually a testable hypothesis. Careful searching along a line between, say, Stonehenge and Glastonbury, might well provide new records for *Dicranella crispa,* since it is an under-recorded plant anyway. Tonight I shall talk about mosses and liverworts for whose distribution the explanations are so extraordinary that as little as fifty years ago, they would have been dismissed as fantastic nonsence. There is even a British moss which does indeed grow in lines, especially along lines of power. I shall mention it at the end of this talk.

PRE-GLACIAL SURVIVORS

If you travel a long way north and a long way west, and climb a couple of thousand feet, you may come to a place such as the foot of the cliffs on the north side of Ben Nevis. The snowbeds in the gulley rarely melt, and cold air collects around the little loch, which rarely sees the sun. The barren screes support a few blades of grass, tormentil, some sedges, and perhaps some fir clubmoss. There are mats of the hoary moss, *Rhacomitrium lanuginosum,* and in the sunless crevices, some black squashy stuff which contains leafy liverworts. There are about ten species in the British Isles, known collectively as the oceanic hepatic mat community, though there is no one place where all occur together. They are strangely coloured, often dark brown, purple or orange, and with leaves of unusual shapes.

Though belonging to several unrelated genera, they have much in common, apart from being confined to cool wet barren habitats in the west and north. Figure 2 shows the occurrence of the ten species in different parts of the British Isles. Fruit in all is very rare or unknown, and they have no other obvious means of dispersal. Though restricted and patchy in distribution, these plants may be abundant where they occur. Nine of the ten are found in the far northwest of Scotland, and up to seven in western Ireland. There are only four in all Europe apart from Norway. It seems generally accepted that they survived the Ice Ages in the west and north of the British Isles.

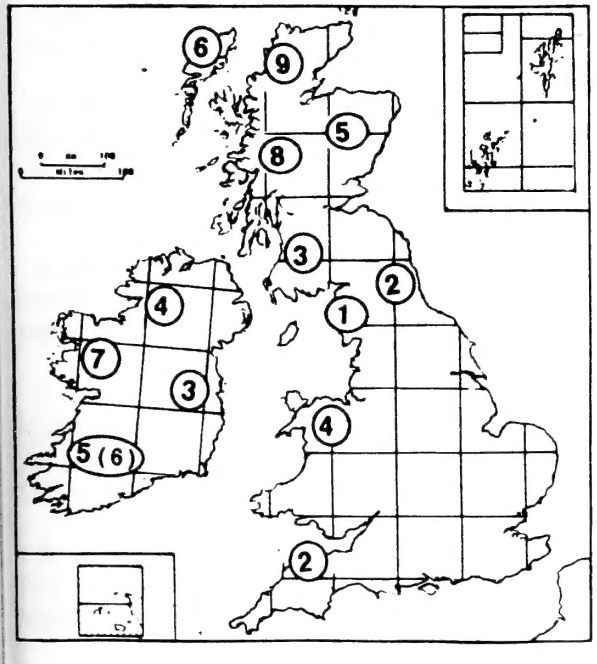

Figure 2
Numbers of oceanic mat hepatics occurring in different parts of the British Isles

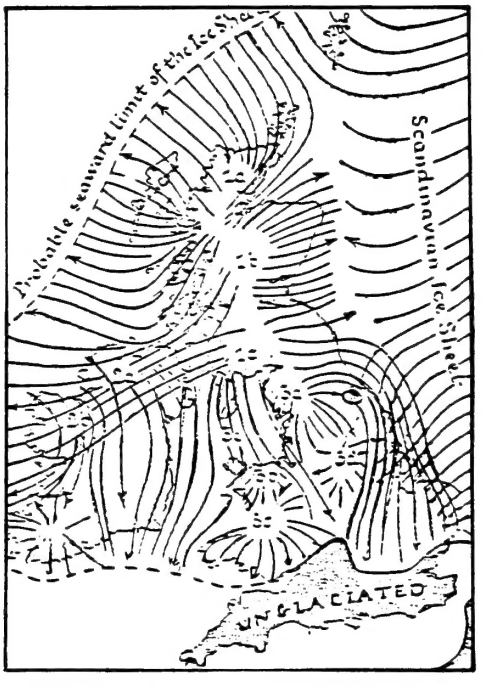

Figure 3
Maximum extent of glaciation in the British Isles
(by L.D. Stamp, as reproduced in 'Climate and the British Scene' by Gordon Manley)

Figure 3 shows the estimated maximum extent of the British ice sheets. It may look as if nothing can have survived in western Scotland, where most of these hepatics grow. There are many arctic alpine plants in Scotland which migrated north and then uphill after the Ice Ages, but all occur in Europe or elsewhere in the high Arctic. Most of these hepatics do not. They were unlikely to have grown in the relatively dry tundras to the east and south. In Devon and Cornwall there was more suitable ground, but only two species grow there today.

Yet there are three reasons why their survival may have been possible further north. First, small ice-free areas may have existed. Second, much water was locked up in ice caps, and sea level was lower than today. Also the pressure of the ice depressed the earth's surface, and rocks around the edges were forced upwards to compensate. There was thus extensive land along and to the west of our present coasts, with a cold wet climate, but perhaps free of ice, which is now submerged. Last, there is an analogy with the Antarctic peninsular of Graham Land, with a climate even colder than that of Ice Age Scotland. It has very few ferns or flowering plants, but a rich flora of over 300 species of mosses and hepatics. That some of our oceanic hepatics could have survived a far more severe climate is suggested by the presence of five species on the high Cairngorms, where they are covered with snow until midsummer.

If these ten species are pre-Ice Age survivals, this map shows clearly why there are fewer of them in North Wales, and in the mountains of Northern England, Southern Scotland and Eastern Ireland, which were under the thickest parts of the ice sheet. These hepatics appear to be among the most ancient species in the British flora. Yet their world distribution is even more extraordinary. It is almost random (Figure 4) except for their absence from the high Arctic. In the tropics they are found in cool humid high-altitude forests. Apart from Norway, the strongest affinities are with the Himalayas.

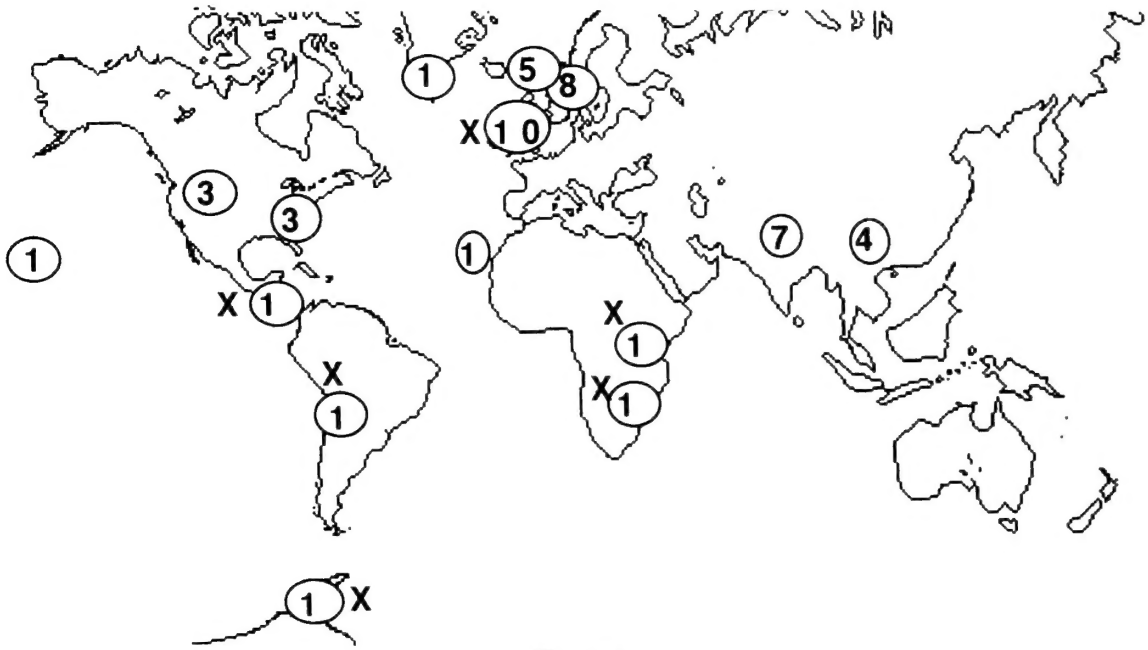

Figure 4
World distribution of ten British oceanic hepatics.
X indicates *Adelanthus lindenbergianus*

Why the Himalayas ? Given the rarity of fruit, they can hardly have migrated betreen India and Scotland, missing most of the intermediate mountains. The Faroes have five species, yet only one is known from Hawaii, which has developed a far richer flora after 60 million years isolation.

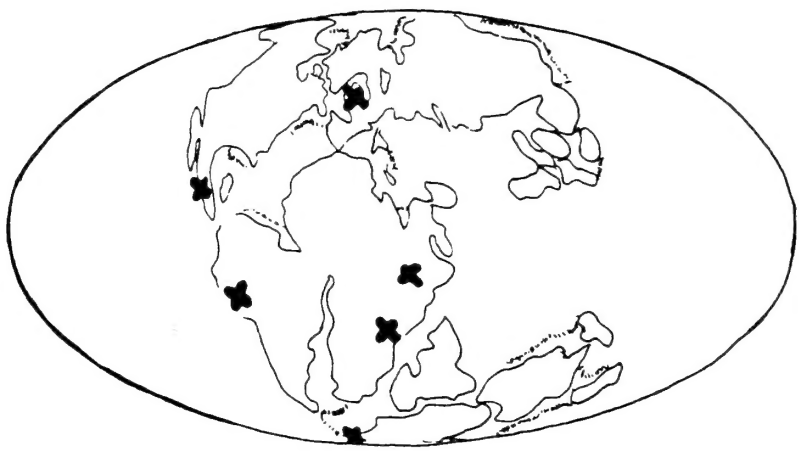

Figure 5
Present world distribution of *Adelanthus lindenbergianus* mapped onto Cretaceous continents

An especially extraordinary distribution is that of the dark brown hepatic, *Adelanthus lindenbergianus*. Found last century on one hill on Achill Island, it is now recorded , sometimes in fair quantity , from the far west of Ireland, on barren north facing slopes in Donegal, Sligo and Mayo. Its absence from Scotland is described in the Atlas as surprising, but the explanation is simple. Gordon Rothero, one of Scotland's most strenuous and active bryologists, had not found it at a single site in Argyll. This is a reminder that even in the British Isles the distribution of quite conspicuous bryophytes may be imperfectly known. The known distribution of *Adelanthus lindenbergianus* on a world scale may still be very incomplete. It is marked on Figure 4 by crosses. Yet, incomplete as it may be, it makes better sense if these crosses are plotted on a map of the Cretaceous world (Figure 5). Its sites have become more scattered as populations were moved apart by continental drift. Yet even before the age of the dinosaurs, it was probably already a widespread plant. Like the other British oceanic mat hepatics it may be among the most ancient land plants on the planet.

There are several other western Scottish and Irish mosses and hepatics which seem to have survived the Ice Ages almost in situ, and have disjunct distributions, often including the Himalayas. One striking moss, *Myurum hebridarum* is frequent in the Outer Hebrides, grows in a few sites on the inner Scottish islands and mainland, and at one site in Ireland. However in the Hebrides it grows at sea level in a damp and chilly but almost frost free climate. It is slow growing and like the oceanic hepatics, has no fruit and no obvious means of dispersal. It is known elsewhere only from Tenerife with another species of the genus in Malasia. Its ecology seems hardly relevant. I have grown this moss for twenty six years. Unlike the hepatics it is undamaged by even severe dessication. It is, like all other mosses I have grown, unaffected by winter frost. Its presence in Scotland suggests that there was a fair variety of vegatation along the western fringes of the ice caps.

ARCTIC ALPINE SPECIES

A very different group of Ice Age survivors are the many British mosses and hepatics that are widespread all around the Arctic and in European mountains further south which retreated to the mountains as the climate grew warmer. Their fates in the British isles since the Ice Age differ widely.

At one extreme is *Paludella squarrosa*, a large moss of Arctic calcareous mires. Fossil remains show that it was common in Britain during the Ice Ages, and lingered long enough to be recorded in a few lowland fens, though these were a habitat vulnerable to drainage and disturbance. It was a relict species, last seen in an Irish site where it may have been destroyed by peat cutting.

A second species which is in no danger, except from a drastically warmer climate, is *Andreaea nivalis*, which is abundant in snowbeds and running snowmelt streams on a few high Scottish mountains, especially Ben Nevis.

A third is *Polytrichum sexangulare*. It has survived, though only just, on the top shelf of my greenhouse in Reading since 1986, under conditions probably warmer than in any natural habitat in Britain. Yet as a wild plant it is confined to vegetation in damp soil on the highest Scottish mountains, usually near or under persistent snowbeds.

A last rare arctic alpine is the rather undistinguished creeping moss, *Brachythecium reflexum*, found in only a few high altitude sites in Scotland. Yet in recent years this plant has appeared and spread in woodlands and even in gardens in the Netherlands, though not yet in Britain.

OUTLIERS FROM WARMER CLIMATES

In contrast there are a few rare mosses of warmer Mediterranean climates which reach their northern limits in Britain, but in a curiously disjunct way. Some are confined to sheltered limestones on the Isle of Portland, Somerset and North Wales. *Eurhynchium meridionale* is found only on Portland, and no further north in France than Bordeaux, so its occurance in Britain is surprising. From a culture started in 1966 I have planted some in my own garden. On sloping calcareous bricks at the side of a flower bed, exposed to warm afternoon sun, it has flourished. Maybe on Portland it is a relict from a warmer period around 6,000 BC, when it could have spread north across France.

Another puzzling distribution is that of *Scorpiurium circinatum*, a Mediterranean plant common along parts of the south coast, especially on limestone. There are scattered records further north, and in the English lowlands. It is not a relict species, since some plants are on limestone monuments, where they

must have arrived after a known date. Yet fruit has not been found on British wild material, and it has no other means of dispersal. I suggest that it does fruit in Britain, but has not been observed.

GAPS IN RECORDING

The next map (Figure 6) shows not one of the rarest, but the commonest British pleurocarp. There may be a few 10 km squares, especially in Caithness and the outer Hebrides, from which *Brachythecium rutabulum* is genuinely absent. Most blanks show only that nobody has been to a particular 10 km square to record it. Parts of Eastern Scotland and most of Ireland are obviously under-recorded. The same pattern can be seen with *Tortula muralis*, which probably grows on mortar and cement in every village and town in the British Isles. On a 1/250,000 Ordnance Survey map I have found one Scottish 10 km square, probably the only one on the British mainland, showing no roads or buildings. It lies inland, north of the Great Glen. Here *T. muralis* may be genuinely absent. Filling blanks in such distribution maps could inspire an unusual summer holiday. The converse can sometimes be true - that a distribution pattern may reflect the activity of an especially knowledgeable or active recorder.

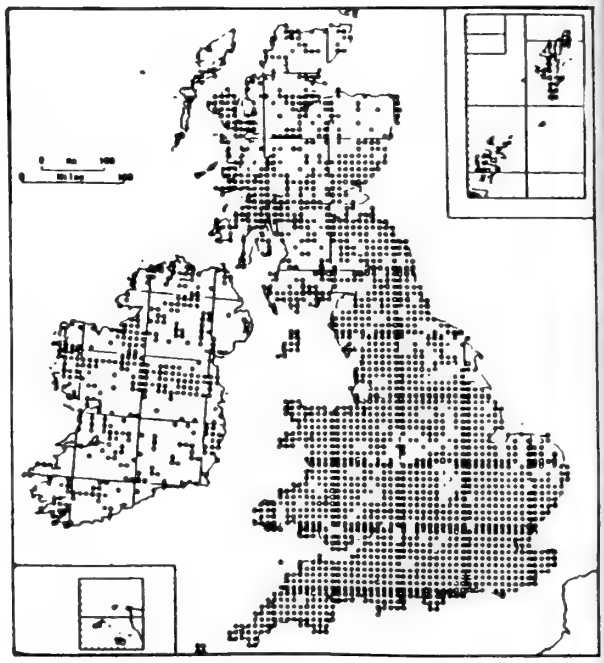

Figure 6
Distribution of *Brachythecium rutabulum*

SUBSTRATE

Mosses are often very particular about their substrate, and the distribution of many species is determined by it. Sphagnum species in Southern England are confined to acid valleys. In contrast the little pleurocarp, *Campylium protensum*, is a southern and eastern species confined to chalk and limestone. Overlaying distribution maps for this and for *Sphagnum* gives almost a geological map, the *Campylium* records outlining the chalk downlands , and the *Sphagna* the acid Greensand, the Bagshot sands, and so on. There are a few overlaps where one 10 km square contains both habitats.

The attractive hairy blue-green thalloid liverwort, *Metzgeria pubescens*, is confined to steep sheltered limestone cliffs. It is a northern species, almost at its southern limit in Derbyshire, and is again confined to 10 km squares containing limestone. Yet, curiously, the squares where it grows tend to be richer in *Sphagna* than those where it is absent. There may be two reasons for this. First, in the wetter more humid north, *Sphagna* are not confined to valley bogs. They can even grow on peat or turf overlying limestone, so they often occur in limestone areas. Secondly the *Metzgeria* grows in some of the most interesting places in Britain, such as the Derbyshire and Yorkshire dales. These have a richer flora, more rain, more cliffs and valleys, and more mosses and liverworts, than the flatter drier agricultural lands of, say, Lincolnshire, where *Sphagna* are also rare.

There are some mosses with very extreme or specialised substrate needs. Some species, such as *Tetraplodon mnioides*, grow on animal bones, carcasses or dung. A few not only tolerate, but are actually confined to lead or copper-rich rocks which are too toxic for most other plants. They may be found on ancient mine waste, and may have been carried from one site to another by the miners. More numerous are the species whose habitats have no parallel among flowering plants, at least in Britain. They are epiphytes, mosses of tree bark. The distribution of many of these has been greatly affected by air pollution.

AIR POLLUTION

Hypnum cupressiforme is the commonest British pleurocarp on rocks, soil and trees. In Reading it is still not common, and twenty years ago grew only on a few limestone walls, as in Kendrick Road. The limestone on which it grew, though neutralising the sulphuric acid formed from airborne sulphur dioxide, had dissolved away through exposure to it. Many other mosses, now common in Reading, were also confined to limestone, as on the capping of the walls outside Kendrick school. Mosses on trees were

less well protected. They were almost absent in Reading, and there have been widespread extinctions in England, Southern Scotland and South Wales. However some of the distribution maps in the Atlas show a complex and paradoxical picture.

Leucodon sciuroides is a creeping moss, a very drought resistant one, of sunny basic tree bark, changing appearance markedly when dry. Its distribution map (Figure 7) shows several kinds of areas. It plainly has a southern distribution. It is especially abundant in the Mediterranean. In the most oceanic parts of Britain, as in Cornwall and Western Scotland, it is naturally rare. In drier parts it is more frequent. However the many old records in now empty squares show that it has decreased greatly. There are also large areas, as around London and in the industrial Midlands, with no records, even old ones. These are the areas of heaviest pollution, where it was probably extinct before any recording began. Most of the scattered recent records in Essex and Norfolk reflect the recent discovery that it does not always grow on trees, but can also be found on walls and tombstones, a habitat less affected by acid pollution. Now people have learned to look for it in this habitat, it may prove less rare in lowland Britain.

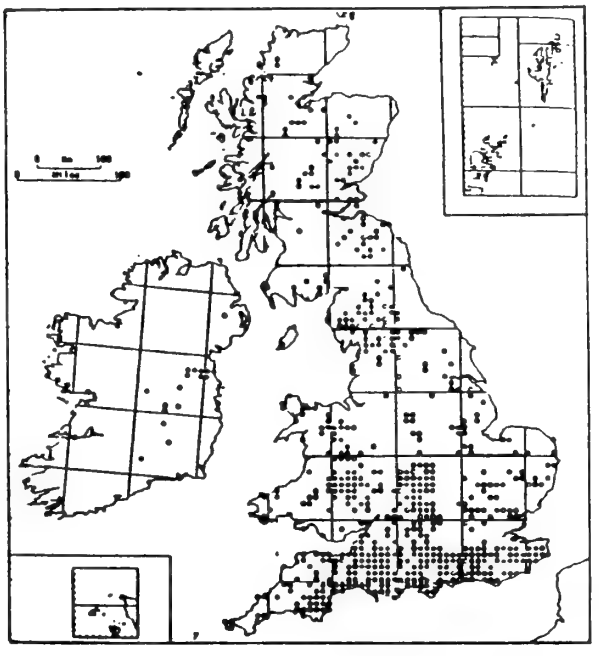

Figure 7
Distribution of *Leucodon sciuroides*

An even more thorough extinction has been that of *Antitrichia curtipendia*, a similar but larger and more handsome moss. In the west and north it is still frequent on rocks and trees. In England it was formerly widespread though confined to trees, but it is now almost extinct. Yet on the brick wall of my front garden in the centre of Reading, an alien habitat eighty miles from the nearest surviving population, this plant persisted in the early 1980's until builders dismantled the bricks. This seems to offer proof that this plant has been destroyed indirectly by acid pollution of its habitat on trees, rather than directly.

ADAPTATION TO NEW HABITATS

This situation shows equally clearly in the distribution of some species of *Tortula*, a large genus containing some epiphytes. *Tortula princeps* is a large handsome species of subalpine limestone. Though it is an adaptable species worldwide, occurring for instance in the American deserts, it is rare and decreasing in Britain and not recorded on artificial substrates. The very similar *T. intermedia* has fared better. It was rare on walls in Reading in the 1960's but it appeared on tarmac here soon after 1980 and is now common. Nationally it is now almost ubiquitous. *T. virescens* is a similar smaller species. The distribution map (Figure 8) shows it to be one of our rarer epiphytes, apart from the remarkable block of records in the polluted northern hinterland of London. Here it has made the jump from trees to tarmac within the past twenty years, and is spreading fast on this habitat. I have recorded it on asbestos near York, the site marked with a cross, and once in Reading on tarmac. This illustrates a general rule, that most of our increasing species of plants and animals are those which are adapting to artificial or disturbed habitats.

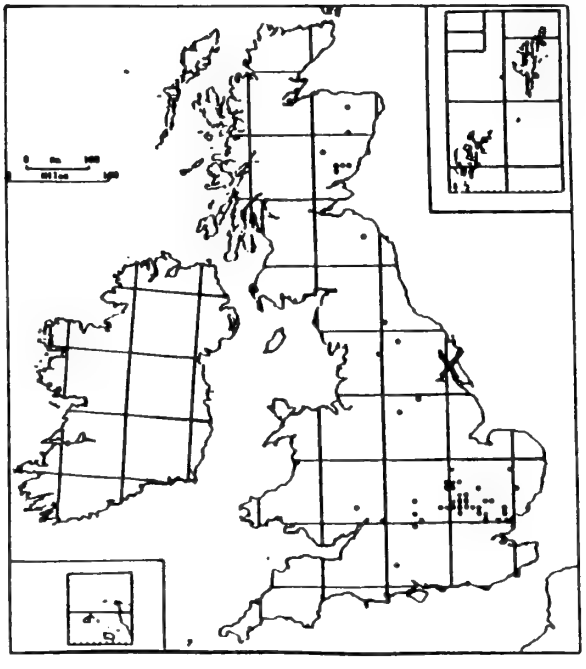

Figure 8
Distribution of *Tortula virescens*

The genus *Orthotrichum* has several species confined to trees forming neat tufts with the fruit tucked among the leaves. These have been far more severely affected by air pollution than others of the genus which can grow on rocks and walls. *Orthotrichum tenellum* (Figure 9) shows a similar pattern to *Leucodon sciuroides* though the extinction has been more nearly total. The absence from the southern half of Wales is striking and may be the result of industrial pollution starting in the eighteenth century. Yet I have found fine material of this plant on an ash tree in Finchley five miles north of the centre of London. The site is marked with a cross. This is one of several astonishing and encouraging records made in the past five years. Epiphytic mosses even those most drastically affected in the past are returning to the London area after a century. This is the result of reductions in sulphur dioxide levels thirty years after the first smokeless zones were introduced in London.

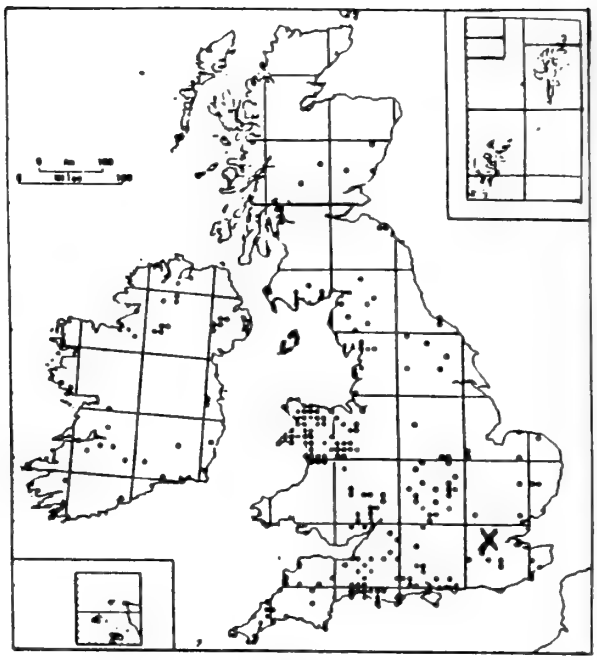

Figure 9
Distribution of *Orthotrichum tenellum*

Finally I come to the genus *Bryum*. There are about fifty species in Britain, and despite the great similarity of many of them, and the difficulties of naming, they show great extremes in their distribution, from high arctic alpine to Mediterranean. *Bryum argenteum*, a distinctive silvery plant, is strongly associated with human activities, and is also perhaps the most widespread moss in the world. It grows in the Antarctic, in the Australian desert, and on almost every pavement in Reading. A less known plant is *B. radiculosum*, considered rather uncommon at the beginning of the century. It is now very common on damp mortar of walls in Reading. While distinctive in its small size, compact tufts and deep vivid green colour it can be hard to confirm microscopically. It is far commoner nationally than the distribution map suggests, and almost certainly increasing.

The most troublesome group of *Bryums* to name include *B. pseudotriquetrum* a large species which once grew on the fountain in Reading Forbury Gardens, *B. erythrocarpum* with a narrow silvery leaf frequent on walls in Reading and *B. pallescens*. The latter is especially difficult to distinguish from another species *B. creberrimum*. The map (Figure 10) shows an almost random British distribution. It shows which gatherings have been found or confirmed by an expert rather than telling us anything about the plant itself. The only clear non-random feature on this map is the concentration of records in mid-Wales often around old lead mines.

And so I come to a final mystery of moss distribution. In an article in The Naturalist on Mosses of Reading in 1972 I mentioned large *Bryums* "which were probably *B. caespiticium* ". In early 1993 I found such a plant on the pavement in Orts Road, Reading. It was not *B. caespiticium* which has a narrower leaf and is of a greener colour.

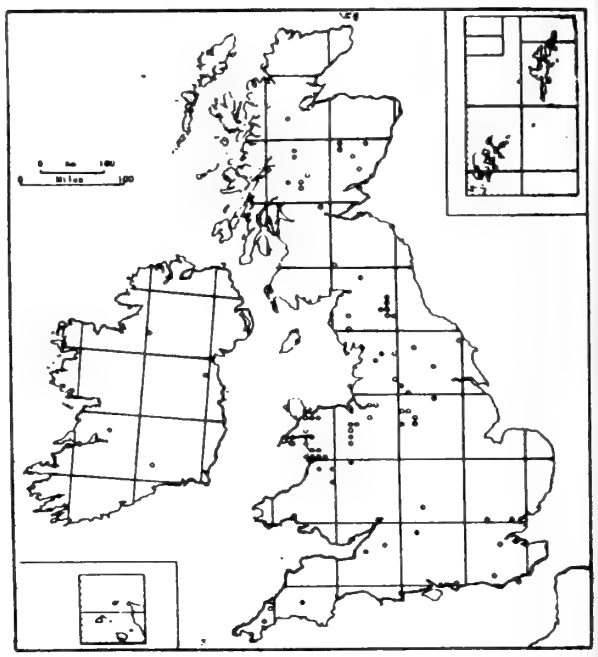

Figure 10
Distribution of Bryum pallescens

I have since found the same plant, or one indistinguishable from it when sterile, in ten other sites in Reading alone. It took some time to realise what these sites had in common. They were under the drip from corrugated iron roofs with single records from wire netting, a road sign and the metal security

capping around Reading jail. Dr. Watson studied the rather poor material with great thoroughness and was unable to name most of them with any confidence. Among the names suggested was *B. pallescens*.

One of the most striking sites is in the car park by the Children's Unit at the Royal Berks hospital. A little plan (Figure 11) shows how it is confined to the drip from corrugated iron but absent from the similar drip zone under the plastic roof.

In April 1994 I was given a few shoots of a moss found by Mark Hill under an electricity pylon in Dorset. He had identified it as *B. pallescens*, it seemed identical to the plant I had found in Reading. Electricity pylons, like corrugated iron, are protected from rusting with zinc paint. This last summer I found similar plants under corrugated iron roofs in Dorset and Kent, and large quantities, fertile, under a pylon on a moor in Derbyshire. I sent some to Mark Hill. This morning, (11th. October), I received his reply, which says; " Thus, I am quite confident that you have found *B. pallescens*. It is a common but much overlooked moss, mainly because it grows in such nasty places ! "

Zinc plating has been a common industrial process only in the past century. Zinc is very toxic to most mosses. A roof with a TV aerial will often have a moss-free zone where water drips off the aerial and runs down.

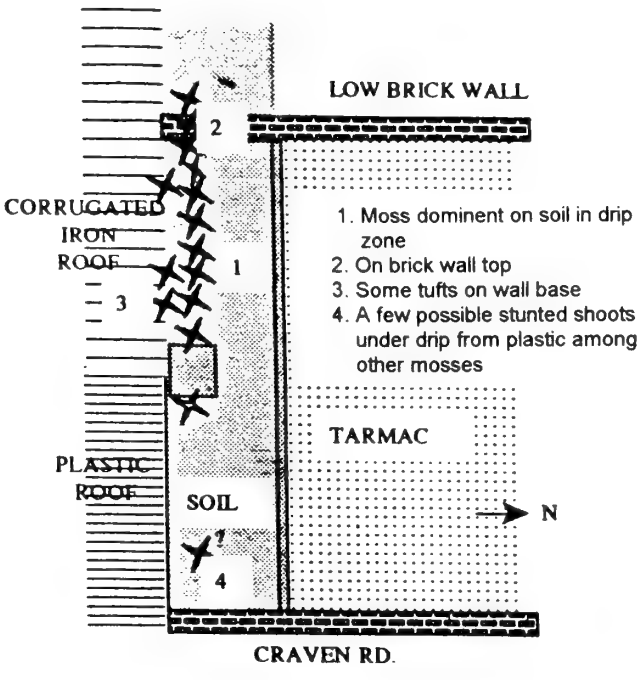

Figure 11
Distribution of zinc-resistant *Bryum sp.* in Royal Berks hospital car park

. There are many natural rocks containing metals poisonous to mosses and a fair number of mosses have adapted to grow on them, but I know of no natural habitat in which zinc contaminated water drips on plants from above. I can only conclude that *B. pallescens*, or one or more *Bryums* very like it, have adapted and colonised this habitat in the past hundred years. It must be very under recorded, and its full distribution under zinc-painted pylons might eventually resemble a map of the National Grid.

The map of its distribution in the Royal Berks hospital car park is as remarkable in a way as that of the global distribution of *Adelanthus decipiens*. So is the fact that unnameable plants with a novel and perhaps unique ecology can appear in the middle of our home town.

The distribution of mosses, whether over a scale of a few inches, or worldwide, can often reveal something significant about their environment and its history, whether it be a history lasting a hundred years or a hundred million years.

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THE SOURCE OF THE RIVER PANG

Alan Burt

The 1991 edition of "The Naturalist" carried an interesting article on the River Pang, describing the condition of the river at intervals along its length. The article explained that the Pang rises in the village of Compton, but I remember it rising further up the valley 25 years ago and presumed the change has come about due to excessive ground water extraction.

During the years 1965 to 1968 I was working in the area of East Ilsley and remember during at least one of those winters seeing the unusual way in which the ground water level could be seen to rise in the valley north of the village and create a stream which flowed down the valley to join the Pang at Compton.

My wife and I have thought of the 1991 article and of my memory of the river in the past, when we have seen the dried up bed of the Pang at locations far downstream from Compton. But during the Autumn of 1993 and on into the winter there was exceptionally heavy rainfall, and we found pleasure in observing flow in the Pang further and further upstream as the season progressed. By the turn of the year we even had hopes of seeing the spring flowing at East Ilsley and made regular trips to investigate. I found, to my pleasure, that one of my colleagues from 25 years ago was also eagerly waiting in the same hope.

Several local people in Compton and East Ilsley were interested to see me recording the flow with a camera, and were pleased to explain that the East Ilsley spring has always risen at 8 to 10 year intervals in the past.

The unusual aspect of the East Ilsley spring is that it occurs where the floor of the valley north of the village has a series of depressions, about five in number, each as big or bigger in area than a tennis court and up to 15 feet deep, together with numerous smaller ones. These depressions, known as "swallow holes" or "sink holes" are locations where the passage of underground water has washed out the chalk to form underground caverns which have then collapsed. Swallow holes are common in chalk areas, and can be a hazard when construction projects involve excavations which may uncover deep voids.

As the wet season progresses, ground water in the valley rises and forms a pond in each depression, these gradually getting deeper and deeper until each overflows into the next one down the valley. Near the village the stream flowing from the ponds is carried by a culvert into the village pond, giving the resident ducks a pleasant surprise, and then out through another culvert to flow down across the fields towards Compton.

During February and March we watched the ponds fill and overflow, reaching their peak at the end of February, and then subsiding. The water table rose to a higher level than for many years, causing the basements of several properties in East Ilsley to fill with water. One gentleman, described by the "Newbury Weekly News" as "the oldest inhabitant" claimed the water reached its highest level for over 80 years.

The stream did not manage to reach Compton this year. About half a mile from East Ilsley the flow was obstructed where the landowner has filled in the bottom of the valley to ease his cultivation. This caused a lake to form and the water soaked away.

It was interesting to note that the highest water lavel in the Pang at Hampstead Norreys, some 3 miles downstream, did not occur until about a month after the peak at East Ilsley, presumably because it takes longer for the large catchment feeding Hampstead Norreys to combine its contribution than the smaller catchment feeding East Ilsley.

It was also interesting and satisfying to see that the forces of nature supersede the efforts of man in influencing ground water levels.

OTTERS

A most interesting and informative talk on Otters was given by Mr Graham Scholey to the Society on 10th. March 1994. Several members have expressed an interest in seeing a summary of the talk in the Naturalist and we are fortunate that excellent notes were made by Kit Brownlee who has supplied this article.

Otters, of which there are 13 species worldwide, are one of the largest members of the weasel family. The European River Otter, which is the one found in the UK, occupies a wide range of habitats from the Arctic tundra of the Eurasian land mass to the tropical forests of South East Asia.

The otter is semi-aquatic, with short legs, extensive webbing between the toes, and a well developed rudder-like tail. It is between three and three and a half feet long, the male (dog) otter being larger than the female, some being as much as four feet in length. Prey is usually caught by eyesight but experiment has shown that extensive whiskers on the face and chin allow prey to be caught in turbid water. When in the water the fact that nose, eyes and ears lie on the same plane allow otters to almost submerge with a minimal amount of body showing above water. This helps to distinguish them from Mink (also a member of the weasel family) which are smaller and show more body when in the water.

Despite the name, River Otter, otters are found in wetlands, estuaries, sealochs and on the coasts of Northern Scotland and the Islands. One of the most important European populations is to be found on Shetland. However, otters seen in the marine environment should not be confused with the Sea Otter, a truly marine species found on the Pacific Coast of America. After swimming in salt water the River Otter needs access to fresh water to wash in, otherwise the salt impairs its ability to thermo-regulate.

As carnivores, otters are fish specialists, with eels representing up to 60% of their diet at certain seasons in some cases. They are also known to take amphibians (including hibernating frogs), small birds and mammals, and to follow spawning salmon up river. Those found on the sea coast and in estuaries (mainly in Northern Scotland) dine chiefly on flat fish, conger eel and other marine fish. Prey is eaten in the water if small enough.

Otters are territorial animals, the male having the larger territory incorporating that of at least two bitches within it, and with the size dependent on food supply. In the South to Southwest of England home ranges may be 10 to 20 miles, while In Northern Scotland it may be up to 40 miles. There is no definite breeding season but breeding becomes more seasonal as one goes further north. The litter consists of two to three cubs who remain within the den or "holt" for between ten to eleven weeks, weaning at around sixteen weeks, and leaving to seek their own territory at a year to eighteen months having learnt the necessary prey catching skills.

The holt is often a subterranean hollow in the river bank scoured out between the horizontal roots of oak, ash or beech. It is not just a nursery but a sanctuary where the otter can rest up during the day. Home ranges therefore contain a number of holts between which the otter moves around its territory. Depending on the terrain the holt can also be a rock hollow, an enlarged rabbit hole, or a reed couch. Other frequent sites for holts are within bramble or thorny scrub.

Since otters are active at night the diurnal otter watcher looks for other signs. The most obvious are droppings or "spraint" used in territory marking. These have a distinctive odour and amorphous shape, and are placed at focal points around the territory, such as the confluences of rivers and streams, boulders, exposed tree roots, tussocks, or the ledges of bridge supports. Otter tracks may be found on snowy or muddy ground and are at least two inches or more across but with the webbing not usually visible. Other signs are otter slides on river banks. Other mammals often make tracks down river banks, but otter slides are usually on very steep banks and unlike other mammal crossing points there is often no corresponding track on the opposite bank.

Prior to the 1950's otters were found throughout the UK with the population peaking after the two world wars. The population crashed in the 50's and today the otter's strongholds are found in Wales, the Southwest of England and in Scotland, with a small population in East Anglia.

There is uncertainty as to the exact cause of the sudden decline in otters. The main cause is thought to have been the introduction of Agricultural Pesticides (organo-chlorines), which had a deleterious affect on otters via their fish prey. Co-factors were the loss of wet lands and changes in river management. Rivers were heavily engineered and their ecology altered by widening and deepening and an increase in the recreational use of rivers and waterways may also have contributed.

Currently the otter and its breeding sites are protected by law. However it is still under threat in marine habitats from oil spills and drowning in lobster creels, and from toxic pollutants such as PCB's in inland waters.

The National Rivers Authority is actively involved, together with other conservation bodies, in otter conservation. Three otter projects have been instigated within the Thames valley region, on the River Wey, in Hertfordshire and on the Upper Thames. This involves identifying all suitable and potential refuge sites within the area, assessing food supply, assessing water quality for toxic pollutants, engaging the sympathies of landowners and other water users, arranging for habitat improvement through replanting trees and scrub on bank sides and "de-engineering" rivers.

Otters as a species are under threat worldwide due to habitat loss and pollution. They are at the top of their ecological food chain and therefore the best indicator we have of a well managed river environment.

THE RECORDER'S REPORT FOR BOTANY 1994

Betty M. Newman

For the past seven years member's records have been arranged according to the nomenclature and order in "Flora of the British Isles" by Clapham, Tutin and Moore 1987. This year the more up-to-date "List of Vascular Plants of the British Isles" by D.H. Kent 1992 has been followed. Where a family name has changed, the older name is put in brackets after the modern one. An alien taxon is indicated by an asterisk (*) and the English names are from "English Names of Wild Flowers" by Dony, Jury and Perring 1986.

A selection from the records received is printed below.

***EQUISETACEAE* : HORSETAILS**

Equisetum telmateia Ehrh. **Great Horsetail**
Fox and Hounds pit at Theale, 26.5.94 (AB).

***ASPLENIACEAE* : SPLEENWORTS**

Phyllitis scolopendrium (L.) Newman **Hart's-Tongue**
Whitchurch Hill, 14.5.94 (AB).

AZOLLACEAE

Azolla filiculoides* Lam. **Water Fern
In the Loddon between Sindlesham Mill and Loddon Bridge (MB).

RANUNCULACEAE

Helleborus foetidus L. **Stinking Hellebore**
Warburg Reserve, Bix, 18.6.94 (AB).

Ranunculus auricomus L. **Goldilocks Buttercup**
Hambleden, 9.4.94 (J&SW).

Myosurus minimus L. **Mousetail**
By gate to Bottom Cottage, from canal, 9.5.94 (AB).

PAPAVERACEAE

Papaver hybridum L. **Rough Poppy**
Aston Upthorpe, 16.7.94 (AB).

FUMARIACEAE

Ceratocapnos claviculata (L.) Lidén **Climbing Corydalis**
Finchampstead, 15.6.94 (AB).

CHENOPODIACEAE

Chenopodium polyspermum L. **Many-seeded Goosefoot**
Ruscombe, 17.8.94 (AB).

Atriplex prostrata Boucher ex DC. **Spear-leaved Orache**
Waterloo Meadows, 9.6.94; Watlington and Pyrton Hill, 31.7.94; Ruscombe, 12.8.94 (AB).

CARYOPHYLLACEAE

Cerastium arvense L. **Field Mouse-ear**
Watlington and Pyrton Hill, 12.6.94 (AB).

POLYGONACEAE

Persicaria bistorta (L.) Samp. **Common Bistort**
Fox and Hounds pit at Theale, 26.5.94 (AB).

Rumex hydrolapatham Hudson **Water Dock**
Greywell, 30.7.94 (AB).

CLUSIACEAE (HYPERICACEAE)

Hypericum sp.
A shrubby Hypericum at entrance to Smallmead tip, probably **H. x inodorum* Miller as reported by H.J.M. Bowen in 1988 (C&RG).

BRASSICACEAE (CRUCIFERAE)

Hesperis matronalis* L. **Dame's Violet, Sweet Rocket
Waterloo Meadows, 9.6.94; Watlington and Pyrton Hill, 12.6.94 (AB).

Rorippa sylvestris (L.) Besser **Creeping Yellow-cress**
Greywell, 30.7.94 (AB).

Rorippa amphibia (L.) Besser **Great Yellow-cress**
Whitchurch Hill, 14.5.94 (AB).

Cardamine amara L. **Large Bitter-cress**
Moor Copse, 24.4.94 (AB).

Cardamine flexuosa With. **Wavy Bitter-cress**
Moor Copse, 24.4.94; Sulham Woods, 12.5.94 (AB).

Thlaspi arvense L. **Field Penny-cress**
Sulham Woods, 12.5.94 (AB).

Lepidium draba* L. **Hoary Cress
Waterloo Meadows, 9.6.94 (AB).

RESEDACEAE

Reseda luteola L. **Weld, Dyer's Rocket**
Waterloo Meadows, 9.6.94; Greywell, 30.7.94 (AB).

PRIMULACEAE

Primula elatior (L.) Hill **Oxlip**
Hambleden, 4.4.94 (J&SW).

Lysimachia vulgaris L. **Yellow Loosestrife**
Ruscombe, 17.8.94 (AB).

CRASSULACEAE

Sedum telephium L. **Orpine**
Sonning Common and Rotherfield Greys, 20.4.94; Waterloo Meadows, 31.5.94 (AB).

ROSACEAE

Filipendula vulgaris Moench **Dropwort**
The Holies, 28.6.94; Aston Upthorpe, 16.7.94 (AB).

Rubus caesius L. **Dewberry**
Ruscombe, 17.8.94 (AB).

Geum rivale L. **Water Avens**
Moor Copse, 2.6.94 (AB).

Agrimonia procera Wallr. **Fragrant Agrimony**
Aston Upthorpe, 16.7.94 (AB).

FABACEAE (LEGUMINOSAE)

Anthyllis vulneraria L. **Kidney Vetch**
Aston Upthopre, 16.7.94 (AB).

Trifolium hybridum* L. **Alsike Clover
Waterloo Meadows, 31.5.94 (AB); Bramshill Plantation, 6.7.94 (C&RG).

Trifolium arvense L. **Hare's-foot Clover**
Bramshill Plantation, 6.7.94 (C&RG).

Genista anglica L. **Petty Whin**
Bramshill Plantation, 1993/4 (C&RG).

THYMELAEACEAE

Daphne laureola L. **Spurge-laurel**
Hambleden, 4.4.94 (J&SW).

SANTALACEAE

Thesium humifusum DC. **Bastard-toadflax**
Hartslock Reserve, 19.5.94 (AB).

BORAGINACEAE

Symphytum x uplandicum Nyman **Russian Comfrey**
Waterloo Meadows, 31.5.94 (AB).

GERANIACEAE

Geranium rotundifolium L. **Round-leaved Crane's-bill**
Bix Village, 1.6.94 (C&RG).

Geranium pyrenaicum Burm. f. **Hedgerow Crane's-bill**
At edge of children's play area between Kingfisher Drive and South Lake, Woodley, 1993 (MB).

Geranium lucidum L. **Shining Crane's-bill**
At bottom of Pond Head Lane, Earley, 1993 (MB).

Geranium pusillum L. **Small-flowered Crane's-bill**
Finchampstead, 15.6.94 (AB).

BALSAMINACEAE

Impatiens glandulifera* Royle **Indian Balsam
Greywell, 30.7.94 (AB).

Impatiens capensis* Meerb. **Orange Balsam, Jewel Weed
In the stream in centre of meadows between Loddon Bridge and Sindlesham Mill, Earley, 1993 (MB).

APIACEAE (UMBELLIFERAE)

Myrrhis odorata* (L.) Scop. **Sweet Cicely
Warburg Reserve, Bix, 16.6.94 (AB).

Sison amomum L. **Stone Parsley**
Ruscombe, 17.8.94 (AB).

Heracleum mantegazzianum* Sommier & Levier **Giant Hogweed
Nuffield Ridgeway and Mongewell Woods, 13.3.94 (AB).

GENTIANACEAE

Centaurium erythraea Rafn. **Common Centaury**
Bramshill Plantation, 1993/94 (C&RG); Watlington and Pyrton Hill, 12.6.94; The Holies, 23.6.94; Marlston Farm, 20.7.94 (AB).

APOCYNACEAE

Vinca minor* L. **Lesser Periwinkle
Sulham Woods,12.5.94 (AB).

CUSCUTACEAE

Cuscuta epithymum (L.) L. **Dodder**
Hartslock Reserve, 17.6.94 (AB).

BORAGINACEAE

Lithospermum officinale L. **Common Gromwell**
Hartslock Reserve, 17.6.94 (AB).

Pentaglottis sempervirens* L. Tausch ex L. Bailey **Green Alkanet
Sonning Common and Rotherfield Greys, 20.4.94; Waterloo Meadows, 31.5.94 (AB).

Myosotis laxa Lehm. **Tufted Forget-me-not**
Bramshill Plantation, 1993/94 (C&RG).

Myosotis ramosissima Rochel **Early Forget-me-not**
Hartslock Reserve, 19.5.94 (AB).

VERBENACEAE

Verbena officinalis L. **Vervain**
The Holies, 23.6.94 (AB).

LAMIACEAE (LABIATAE)

Stachys palustris L. **Marsh Woundwort**
Bramshill Plantation, 11.7.94 (C&RG); Greywell, 30.7.94; Ruscombe, 17.8.94; Rotherwick, 21.9.94 (AB).

Nepeta cataria L. **Cat-mint**
Aston Upthorpe, 16.7.94 (AB).

Clinopodium acinos (L.) Kuntze **Basil Thyme**
Aston Upthorpe, 16.7.94 (AB).

Mentha x verticillata L. **Whorled Mint**
Greywell, 30.7.94 (AB).

SCROPHULARIACEAE

Linaria repens (L.) Miller **Pale Toadflax**
The Holies, 23.6.94; Aston Upthorpe, 16.7.94; Ruscombe, 17.8.94 (AB).

Veronica montana L. **Wood Speedwell**
Aldworth and Westridge Green, 16.5.94 (AB).

Veronica polita Fries **Grey Field-speedwell**
Ruscombe, 17.8.94 (AB).

Parentucellia viscosa (L.) Caruel **Yellow Bartsia**
Bramshill Plantation, 6.7.94, an unusual record for this area (C&RG).

OROBANCHACEAE

Orobanche elatior Sutton **Knapweed Broomrape**
Watlington and Pyrton Hill, 31.7.94 (AB).

VALERIANACEAE

Centranthus rubra* (L.) DC. **Red Valerian
Sulham Woods, 12.5.94 (AB).

ASTERACEAE (COMPOSITAE)

Centaurea cyanus* L. **Cornflower
Waterloo Meadows, 9.6.94 (AB).

Lactuca serriola L. **Prickly Lettuce**
Waterloo Meadows, 9.6.94; Ruscombe, 17.8.94 (AB).

Tanacetum vulgare L. **Tansy**
Beside river path at Loddon Bridge, Earley, 1993 (MB).

Achillea ptarmica L. **Sneezewort**
Bramshill Plantation, 11.7.94 (C&RG).

Anthemis arvensis L. **Corn Chamomile**
Waterloo Meadows, 9.6.94 (AB).

Senecio erucifolius L. **Hoary Ragwort**
Ruscombe, 17.8.94 (AB).

Senecio squalidus* L. **Oxford Ragwort
Waterloo Meadows, 31.5.94 (AB).

Senecio viscosus L. **Sticky Groundsel**
Ruscombe, 17.8.94 (AB).

Doronicum pardalianches* L. **Leopard's-bane
Sonning Common and Rotherfield Greys, 20.4.94 (AB).

Petasites fragrans* (Villars) C. Presl. **Winter Heliotrope
On edge of main road footpath, Winterbrook, Wallingford, 1993 (MB).

Bidens tripartita L. **Trifid Bur-marigold**
Rotherwick, 21.9.94 (AB).

HIPPURIDACEAE

Hippuris vulgaris L. **Mare's-tail**
Greywell, 30.7.94 (AB).

CYPERACEAE

Cyperus longus L. **Galingale**
By roadside in a lane at Hurst (BTP).

POACEAE (GRAMINEAE)

Catapodium rigidum (L.) C.E. Hubbard **Fern-grass**
Swyncombe Downs, 7.7.94 (C&RG).

Lagurus ovatus* L. **Hare's-tail
Bramshill Plantation, 11.7.94 (C&RG).

TYPHACEAE

Typha angustifolia L. **Lesser Bulrush**
Bramshill Plantation, 6.7.94 (C&RG).

LILIACEAE

Paris quadrifolia L. **Herb-Paris**
Warburg Reserve, Bix, 16.6.94 (AB).

Leucojum aestivum L. **Summer Snowflake, Loddon Lily**
Remenham, 21.4.94 (JM).

ORCHIDACEAE

Cephalanthera damasonium (Miller) Druce **White Helleborine**
Four flowering spikes this year at Chambers Copse, Emmer Green, 22.5.94 (JM).

Listera ovata (L.) R.Br. **Common Twayblade**
Flowered again this year at Chambers Copse, Emmer Green, 22.5.94 (JM); Warburg Reserve, Bix, 16.6.94; Hartslock Reserve, 17.6.94 (AB).

Platanthera bifolia (L.) Rich. **Lesser Butterfly-orchid**
Warburg Reserve, Bix, 16.6.94 (AB).

Dactylorhiza praetermissa (Druce) Soo **Southern Marsh-orchid**
Greywell, 30.7.94 (AB).

CONTRIBUTORS

Thanks are due to the following contributors:

Maureen Baggaley	(MB)	John Marshall	(JM)
Alan Brickstock	(AB)	B.T. Parsons	(BTP)
Colin & Renee Grayer	(C&RG)	John & Sheila Ward	(J&SW)

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THE RECORDER'S REPORT FOR FUNGI 1994

Alan Brickstock

Are seasons getting earlier?

1994 again saw a very early fungus season, starting in early September. The rest of that month was very good, but a long, dry spell then ensued, and October, usually the prime foraying month, was relatively poor. Many usually common species were very sparse, and on a number of the later forays, the nice, big 'beginners' fungi were sadly absent.

Despite this, or perhaps because of it, many species continued to be found, albeit in small numbers. There were odd exceptions. The usually uncommon *Lentinellus cochleatus* was abundant on fallen logs on the Whiteknights campus. There were an unusually large number of *Amanita phalloides* at Sulham. The interesting *Libertella faginea*, abundant at Sulham in 1990, but not found since then, was found on several forays this season.

The beautiful Porcelain fungus or Beech-tuft fungus, *Oudemansiella mucida* is usually to be found, sparingly, high up on beech trunks, tantalisingly out of focusing range of would-be photographers. This autumn it has been found in abundance, growing along fallen beech logs, at a number of local sites. The honey fungus, *Armillaria mellea*, has also appeared in great abundance. The False Chanterelle, *Hygrophoropsis aurantiaca*, which was abundant in 1992, but very scarce last year, was again abundant in local pine woods

Malcolm Storey had the good fortune to find several clumps of *Omphalotus olearia* along a narrow road near Bucklebury. This is a most striking species, occasionally found in Europe, where it grows mainly on Olive trees. It is found very rarely in Southern England, where it usually grows on roots or stumps of Oak or Sweet Chestnut. In this case there were several moderate clumps along the edge of the road, presumably on the roots of the host, and one superb, very large clump on a very ancient stump, at the top of a steep bank. The stump appeared to be oak as far as we could tell. The gills of this fungus glow with a greenish colour in the dark.

At Hambleden, as well as some very nice Death Caps, there were some splendid purple *Cortinarius sodagnitus*, and a few Wood Blewits, very similar to the Cortinarius at first glance ! In fact someone had gathered one of the Cortinarius together with some Blewits, for the pot !

A second potentially dangerous confusion was demonstrated by someone else gathering the poisonous *Inocybe geophylla var. lilacina* together with some *Laccaria amethystea*, an excellent edible species. These two species look quite similar at first sight, until one looks at the gills. The gills of the *Inocybe* are closely spaced, start white and become a dirty greyish brown with age. Those of the *Laccaria* are violet, fading with age, and are widely spaced and wavy-edged.

Moral: BE CAREFUL !

Stereum subtomentosum, which looks very similar to *S. hirsutum*, but has a relatively narrow, almost stipe-like attachment to the substrate, and turns bright yellow when bruised, was also found here.

Other interesting finds included the small orange discomycete *Lachnellula occidentalis*, growing on conifer twigs, *Polydesmia pruinosa*, a small white ascomycete growing on *Hypoxylon fragiforme*, and *Leptosporomyces fuscostatus*, a creamy-white resupinate growing on coniferous wood. This species has orange rhizomorphs under the bark.

At College (or Abbots) Wood, we made one of the more interesting finds of the year; *Piloderma croceum*, whose mycelium was forming a brilliant egg-yellow carpet, many square metres in extent, just below the surface of a covering of beech leaves. This species normally grows on rotting conifer wood, among needles and leaves, which are permeated by the mycelium. The woodland here has been considerably thinned in recent years, and there is still a stand of mature conifers near to where this mycelial 'carpet' was found - so perhaps there are rotting conifer roots below the beech litter ?

Some nice finds at The Lookout, near Bracknell, on December 4, included *Mycena rorida*, which has a small cap on a thread-like stipe, which has a translucent, gelatinous sheath; *Mycena viscosa*, similar to *M. epipterygia*, but with rusty brown spots on the cap and gills; and *Paxillus panuoides*, which was unusually common on conifer logs, including those round the car park. The logs here also had

Phlebiopsis gigantea, a soft, wax-like, greyish-white resupinate, which becomes creamy-white and hard when dry. This species inhibits the spread of *Heterobasidion annosum* in conifers, and is sometimes introduced for this purpose. Another interesting find was *Mucronella calva var. aggregata*, growing on conifer. This species consists of tiny white spines, arising directly from the substrate. It is waxlike and soft, translucent and glasslike when wet, becoming yellowish when dry.

The rare *Anthina flammea*, found last year at Pamber Forest, was found there again by Paul Cook.

The total number of species found in the Reading area, 433, only slightly fewer than our record. 322 of these species were recorded on forays of the Reading Fungus Group, and numerous people on these forays helped with identifications. Many thanks to all of them.

The following is a very arbitrary selection of some of the more interesting finds.

Gill Fungi

Agaricus porphyrizon Orton
Emmer Green,25.09.94 (GC). Cap has bright purplish-lilac fibrils on a yellowish background.

Amanita echinocephala (Vitt.) Quél
Warburg Reserve, Bix, 09.10.94 (RFG) A very uncommon species; whitish to pale brown, covered in pointed warts, and with a thick, swollen stipe.

Clitocybe geotropa (Bull.) Quél
Warburg Reserve, Bix, 09.10.94 (RFG); Ufton Nervet, 01.12.94 (IMB) A large, stout species, which grows in mixed woodland or grassy clearings.

Coprinus macrocephalus (Berk.) Berk.
Warburg Reserve, 17.04.94 (RFG) A small coprinus with cylindrical or conical cap. Grows in dung or rotting straw.

Cortinarius amoenolens Henry.ex.Orton
Sulham, 02.10.94 (BBONT); Sulham, 25.09.94 Has a straw-coloured cap and violet stipe, with a bulbous base.

Cortinarius auroturbinatus (Secr.) Lange
Sulham, 02.10.94 (BBONT) Cap sulphur-yellow, discolouring rusty brown, viscous. Stipe yellow.

Cortinarius calochrous (Pers.) Fr.
Sulham, 02.10.94 (BBONT) Cap yellow ochre, gills lilac-pink, stipe yellow with a white bulb.

Cortinarius caroviolaceus Orton
Sulham, 02.10.94 (BBONT) An uncommon species of beechwoods on chalk. Ochre to buff.

Cortinarius duracinus Fr.
Warburg Reserve, Bix, 09.10.94 (RFG) Has a tall stipe, tapered to the base and 'rooting'.

Cortinarius sodagnitus Henry
Hambleden, 01.10.94 (RFG) A fine bright violaceus colour, discolouring to buff from the centre.

Cortinarius splendens Henry
Hambleden, 01.10.94 (RFG) A smallish, sulphur-yellow species.

Crepidotus applanatus (Pers.) Kummer
Hambleden, 01.10.94 (RFG) A creamy-white, shell-shaped species, with a rudimentary stipe, on rotting wood.

Drosella fracida (Fr.) Sing. syn. Lepiota irrorata Quél.
California Country Park, 08.10.94 (AB) A straw-coloured cap covered, when young, in dew-like drops, which leave dark spots when they dry. Stipe white and smooth above the ring, covered in brownish scales below. I have only seen this species once before, on a foray with Dr. Hora.

Flocculina granulosa Lange) Orton
Sulham, 14.11.94 (AB) A small ochre species, covered in small granules. Growing here on the upturned root-ball of a fallen cherry tree. Gave the appearance of being thickly covered in dust: I did in fact think this was the case when I first saw them !

Galerina autumnalis (Peck) Smith & Sing.
Maiden Erleigh Woods, 16.10.94 (RFG)

Hygrocybe konradii Haller var. pseudopersistens
Emmer Green 11.06.94 (GC). Stout, bluntly conical cap, bright yellow. Flushed reddish in the var.

Inocybe bongardi (Weinm.) Quél
Warburg Reserve, Bix, 09.10.94 (RFG) A rather stout, reddish-brown species.

Lactarius pallidus (Pers.ex.Fr.) Fr.
Peppard, 25.09.94 (GC). Pale buff to flesh coloured, spotted buff, rather like *Collybia maculata*

Lactarius spinosulus Quél
Warburg Reserve, Bix, 09.10.94 (RFG) A pinkish-buff to lilac cap, with scattered, pointed scales.

Lepiota aspera (Pers. in Hofm. ex Fr.) Quél.
Warburg Reserve, Bix, 09.10.94 (RFG) A stout species, covered in chestnut-brown scales.

Leptonia euchroa (Pers.ex.Fr.) Kummer
Warburg Reserve, Bix, 09.10.94 (RFG) A small, strikingly violaceus species. Gills have a darker edge.

Leptonia lazulina (Fr.) Quél.
Sulham, 25.09.94 (RFG) A small, strikingly blackish-blue species.

Leucoagaricus pilatianus (Demoulin) Bon & Boiff.
Pheasants Hill, 01.10.94 (RFG) A reddish-brown species, with scaly or fleecy cap.

Mycena adonis (Bull.) S.F.Gray
Warburg Reserve, Bix, 09.10.94 (RFG); Maiden Erleigh Woods, 16.10.94 (RFG) A small, salmon-pink or red species. Cap very striate.

Mycena rorida (Scop.) Quél.
The Lookout, Bracknell, 04.12.94 (RFG) See description in text.

Mycena viscosa Secr.) Maire
The Lookout, Bracknell, 04.12.94 (RFG) See text.

Omphalotus olearius (DC.ex Fr.) Sing. (= O. *illudens* (Schw.) Sacc.)
Bucklebury, 28.08.94 MS) See text.

Pluteus leoninus (Schaeff. ex Fr.) Kummer
Warburg Reserve, Bix, 09.10.94 (RFG) A rather rare species with a bright golden, velvety cap.

Pluteus luteovirens Rea
Maidenhead Thicket, 18.09.94 (RFG) An uncommon, mustard-yellow species which grows on elm.

Pluteus phlebophorus (Ditm.) Kummer
Warburg Reserve, Bix, 09.10.94 (RFG) Rather like a small *P. cervinus*, with a very wrinkled cap.

Ripartites helomorphus (Fr.) Karst.
Turville Heath, 25.09.94(PC) Like a *Clitocybe*, but with spined, pinkish-white spores.

Russula brunneoviolacea Crawshay
The Coombes, 16.10.94 (RFG) Cap a vivid violet, purple or wine colour.

Russula lundelii Sing.
Sulham, 02.10.94 (BBONT) Colour very variable. Gills deep safron, with connecting veins at their bases.

Russula puellaris Fr.
Lambridge Wood, 24.09.94 (GC). Very variable 'washed out' colours, bruising pale ochre.

Stropharia aurantiaca (Cke.) Orton
Sulham, 14.11.94 (AB) A striking orange-red species, usually growing on rotting sawdust or wood chippings. The single specimen here was growing at the base of a fence post.

Tricholoma viridilutescens Moser
Warburg Reserve, Bix, 09.10.94 (RFG) Greenish-yellow. Gill edges notched.

BOLETI

Leccinum melaneum (Smotl.) Pil.& Derm.
Sulham, 02.10.94 (BBONT) Similar to a birch bolete, but cap very dark, almost black.

APHYLLOPHORALES

Antrodia xantha Erikss.
Kildridge Wood, Bucks, 27.02.94 (PC) A resupinate polypore, growing on conifer stumps, and smelling strongly of lemons.

Ceriporiopsis gilvescens (Bres.) Dom
Warburg Reserve, Bix, 09.10.94 (RFG) Waxlike resupinate polypore, white when young, bruising red-brown.

Clavariadelphus fistulosus (Fr.) Corner
California Country Park, 30.10.94 (RFG) A stiff, slender 'club fungus', growing on alder.

Meruliopsis corium (Fr.) Ginns
Lackmore Wood, 13.11.94 (RFG) A resupinate, whose lower surface is smooth when young, but merulius-like when older.

Mucronella calva v. aggregatum (Fr.) Pil.
The Lookout, Bracknell, 04.12.94 (RFG) See text.

Perenniporia fraxinea (Fr.) Ryv.
Turville Grange, 03.09.94 (PC) A bracket-like polypore, growing on ash.

Piloderma croceum Erikss.& Hjortst
College Wood, 13.11.94 (RFG) See text.

Postia tephroleucus (Fr.) Jül.
Warburg Reserve, Bix, 09.10.94 (RFG) A bracket-like rotter of dead wood. Whitish at first, becoming grey-brown.

Typhula phacorrhiza Fr.
Garden, Cockney Hill, 14.10.94 (AB) A creamy-yellow, grass-like species. 50 or so specimens were growing in a small flower pot.

GASTEROMYCETES

Sphaerobolus stellatus Tode
The Lookout, Bracknell, 04.12.94 (RFG) A small 'birds nest' fungus.

ASCOMYCETES

Camerops lutea (Alb.& Schw.) Nannf.
Bucklebury, 28.08.94 (PC) Grows on box, and stains wood bright yellow.

FUNGI IMPERFECTI

Anthina flammea Jungh. Fr.
Pamber Forest, ? (PC) Forming bright pink grass-like strands on leaf litter.

Libertella faginea Desm.
Pheasants Hill, 01.10.94 (RFG) See text.

CONTRIBUTORS

Alan Brickstock	(AB)	B.T. Parsons	(BTP)
Ivy Brickstock	(IMB)	Reading Fungus Group Foray	(RFG)
Paul Cook	(PC)	Malcolm Storey	(MS)
Gordon Crutchfield	(GC)		

Thanks especially to Paul Cook for leading forays and for the identification of many of the species, particularly the non-gill ones, and also to Alick Henrici for identifying or confirming many of the more unusual or difficult species.

THE RECORDER'S REPORT FOR ENTOMOLOGY 1994

Brian R. Baker

The order and nomenclature used in this report are those given in Kloet and Hincks (1964-1978), supplemented by Bradley and Fletcher (1979,1986).

EPHEMEROPTERA : MAYFLIES

Ephemera lineata Eaton
Matlock Road, Caversham, 13.7.94, many attracted to a mercury vapour trap on a very warm thundery night (BRB); Hargrave Road, Maidenhead, 30.7.94 (MVA).

DERMAPTERA : EARWIGS

Labia minor (L.)
Hargrave Road, Maidenhead, 30.7.94 (MVA).

HEMIPTERA : PLANT BUGS, WATER BUGS, LEAF HOPPERS, APHIDS

Sehirus bicolor (L.)
Hargrave Road, Maidenhead, 8.5.94 (MVA).

Heterotoma planicornis (Pallas)
Hargrave Road, Maidenhead, 30.7.94 (MVA).

Ledra aurita (L.)
Hargrave Road, Maidenhead, 30.7.94 (MVA).

NEUROPTERA : ALDERFLIES, SNAKEFLIES, LACEWINGS

Chrysopa albolineata Killington
Hargrave Road, Maidenhead, 30.7.94, 26.8.94 (MVA).

Chrysopa carnea Stephens
Hargrave Road, Maidenhead, 30.7.94 (MVA).

Chrysopa flavifrons Braür
Hargrave Road, Maidenhead, 26.8.94 (MVA).

Nathanica capitata (Fabr.)
Pamber Forest, one at a mercury vapour light, 2.7.94. New to Reading Museum collection (BRB).

LEPIDOPTERA : BUTTERFLIES AND MOTHS

Zeuzera pyrina (L.) **Leopard Moth**
Lily Hill Park, Bracknell, 7.7.94; Wellington College, Crowthorne, 11.7.94, a pair in cop (DJS); Matlock Road, Caversham, 13.7.94 (BRB).

Choreutis pariana (Cl.) **Apple Leaf Skeletonizer**
Crawshay Drive, Emmer Green, 2.7.94 (DGN).

Pseudosciaphila branderiana (L.)
Pamber Forest, 2.7.94, several at a mercury vapour lamp (BRB)

Pempelia formosa (Haw.)
164 Kidmore End Road, Emmer Green, 1.7.94, several noted by David Notton during the Society's Annual Mothing Night.

Strymonidia w-album (Knoch) **White-letter Hairstreak**
Dinton Pastures Country Park, 21.5.94, one larva beaten from hedgerow elm (DAY).

Cynthia cardui (L.) **Painted Lady**
Pamber Forest, 12.5.94, 18.7.94; near Churn Hill, Berkshire Downs, 31.5.94 (BRB); Crawshay Drive, Emmer Green, 22.7.94 (JHFN).

Malacosoma neustria (L.) **Lackey Moth**
Tilehurst, May 94, several larval nests seen on a cultivated berberis (DAY).

Rhodometra sacraria (L.) **The Vestal**
Mortimer West End, 7.8.94 (GJD).

Thera juniperata (L.) **Juniper Carpet**
Crawshay Drive, Emmer Green, 16.10.94 (JHFN). A very local species, normally encountered on chalk downs, but recorded in recent years from garden junipers (BRB).

Rheumaptera cervinalis (Scop.) **Scarce Tissue**
Tilehurst, 20.4.94 (DAY); Crawshay Drive, Emmer Green, 27.4.94 (JHFN).

Hyloicus pinastri (L.) **Pine Hawk-Moth**
Lily Hill Park, Bracknell, 7.7.94 (DJS); Matlock Road, Caversham, 13.7.94 (BRB).

Macroglossum stellatarum (L.) **Humming-bird Hawk-moth**
Bedford Close, Newbury, 3.7.94, 12.8.94, 9.9.94, 24.9.94, 4 individuals all on buddleja (NC).

Peridea anceps (Goeze) **Great Prominent**
Mortimer West End, April 94 (GJD); Edgcumbe Park Drive, Crowthorne, 1.5.94 (DJS).

Clostera curtula (L.) **Chocolate-tip**
Hartslock Nature Reserve, 25.5.94 (CMR).

Diacrisia sannio (L.) **Clouded Buff**
Silchester Common, 17.6.94, disturbed from *Calluna* in daytime (BRB); 3.7.94 (GJD).

Meganola strigula (D.& S.) **Small Black Arches**
Mortimer West End, 2.7.94 (GJD); Pamber Forest, 2.7.94 (BRB, GJD).

Meganola albula (D.& S.) **Kent Black Arches**
Hartslock Nature Reserve, 29.6.94 (CMR). A notable record and a probable first for Oxfordshire Vice-county 23.

Agrotis cinerea (D. & S.) **Light Feathered Rustic**
Hartslock Nature Reserve, several between 11.5.94 and 15.6.94 (CMR).

Xestia rhomboidea (Esp.) **Square-spotted Clay**
Hartslock Nature Reserve, 24.7.94, 9.8.94 (CMR); Crawshay Drive, Emmer Green, 4.8.94 (JHFN).

Cucullia lychnitis Ramb. **Striped Lychnis**
Hartslock Nature Reserve, 8.7.94 (CMR); Crawshay Drive, Emmer Green, 4.8.94, larva in the garden (JHFN), (DGN).

Craniophora ligustri (D. & S.) **The Coronet**
Hartslock Nature Reserve, 29.6.94 (CMR).

Apamea sublustris (Esp.) **Reddish Light Arches**
Hartslock Nature Reserve, 29.6.94, 5.7.94, 8.7.94 (CMR); 164 Kidmore End Road, Emmer Green, 1.7.94 (BRB).

Coenobia rufa (Haw.) **Small Rufous**
Hargrave Road, Maidenhead, 30.7.94 (MVA), Mortimer West End, 7.8.94 (GJD).

Chilodes maritimus (Tausch) **Silky Wainscot**
Woolhampton, 15.7.94 (BRB).

Heliothis peltigera (D. & S.) **Bordered Straw**
Mortimer West End, 3.7.94 (GJD), Bedford Close, Newbury, at house lights, 23.7.94, 22.8.94 (NC).

Parascotia fuliginaria (L.) **Waved Black**
Mortimer West End, 11.7.94, Pamber Forest, 1994 (GJD); Woolhampton, 15.7.94 (BRB).

***COLEOPTERA* : BEETLES**

My thanks go to HHC for the usual preselection of records from the comprehensive list submitted by TDH.

Amara anthobia Villa
Leighton Park School, Reading, 23.4.94, in flight interception trap in garden within parkland (TDH). One recent record only (HHC).

Anisodactylus binotatus (Fabr.)
Bramshill Plantation, 3.5.94, under a stone on edge of land-fill site beside conifer plantation (TDH). One recent record only (HHC).

Hydroporus angustatus Sturm
Pamber Forest, 24.5.94, obtained by dipping with a net into pond within oak woodland (TDH). Two local records by Arthur Price (HHC).

Hydraena nigrita Germar
Pamber Forest, 24.5.94, obtained by dipping a net into pond within oak woodland (TDH). No local records (HHC).

Ptenidium pusillum (Gyllenhal)
Leighton Park School, Reading, 17.5.94, in vole nest under piece of wood in area of rank grass in orchard (TDH). New record (HHC).

Neuraphes elongatulus (Müller)
Watlington Hill, 2.1.94 in moss *Hypnum cupressiforme* on rabbit grazed turf on calcareous downland (TDH). One recent record only (HHC).

Ptoteinus crenulatus Pandellé
Great Chalk Wood, near Goring, 6.2.94, on carcase of tawny owl in conifer plantation (TDH). New record (HHC).

Platystethus capita Heer
Near Dunsden Green, near Shiplake, 27.4.94, under small stones on short turf in a chalkpit (TDH). New record (HHC).

Mycetoporus lepidus (Gravenhorst)
Near Child's Court Farm, Ashampstead, 20.3.94. One specimen found walking among young wheat seedlings in arable field (TDH). Three old records (HHC).

Atheta amicula (Stephens)
Leighton Park School, Reading, 21.6.94, two males and one female shaken out of gills of *Lepiota rhacodes* fruit body, which was growing beside compost heap in garden (TDH). Two old non-local records (HHC).

Syncalypta spinosa (Rossi)
Near Dunsden Green, near Shiplake, 27.4.94, numerous specimens walking over moss covered ground in chalkpit (TDH). One old record, no data (HHC).

Reesa vespulae (Milliron)
Leighton Park School, Reading, 14.12.93, several in bathroom on first floor of house within parkland (TDH). No other record, not in Kloet and Hincks (HHC).

Axinotarsus marginalis (Laporte de Castelnau)
Leighton Park School, Reading, 19.6.94, one male resting on window pane inside a house within parkland (TDH). Two recent records only (HHC).

Atomaria atricapilla Stephens
Leighton Park School, Reading, 7.6.94, in flight interception trap set up on lawn beside a ditch in parkland (TDH). Two records, 1924 and 1978 (HHC).

Atomaria lewisi Reitter
Leighton Park School, Reading, 14.6.94, in compost heap made of grass cuttings in garden (TDH). New record (HHC).

Atomaria testacea Stephens
Leighton Park School, Reading, 17.5.94, in vole nest under a piece of wood in area of rank grass in orchard (TDH). New ? I can find no reference to this species (HHC).

Nephus quadrimaculatus (Herbst.)
Leighton Park School, Reading, 30.5.94, three specimens obtained by beating ivy on trunk of sycamore in parkland (TDH). New record (HHC).

Grammoptera variegata (Germar)
Gravelpit Copse, Pamber Forest, 22.5.94, one specimen resting on grass blade in area of hazel, birch and oak within oak woodland (TDH). One old record, Burghfield 1914 (HHC).

Chrysolina varians (Schaller)
Shirburn Wood, near Watlington, 17.6.94, one specimen plus larva on *Hypericum perforatum* in grass verge of track at edge of deciduous woodland on calcareous soil (TDH). One old record without data (HHC).

Longitarsus nigrofasciatus (Goeze)
Near Dunsden Green, near Shiplake, 27.4.94 on *Scrophularia aquatica* in chalkpit (TDH). One recent record only (HHC).

Byctiscus betulae (L.)
Pamber Forest, 24.5.94, one female found feeding on leaf of young hazel in oak woodland (TDH). One recent record only (HHC).

Apion atomarium Kirby
Watlington Hill, 2.1.94, in moss *Hypnum cupressiforme* on rabbit grazed calcareous grassland (TDH). Three old records, F.W. Cooks took it on *Thymus* (HHC).

Apion pubescens Kirby
Bramshill Plantation, 3.5.94, under stone on landfill site beside conifer plantation (TDH). Two old non-local records (HHC).

Apion scutellare Kirby
Silchester Common, 8.6.94, beating gorse together with grass and heather on heathland (TDH). Burghfield, 19.7.1916 only (HHC).

Apion simile Kirby
Silchester Common, 8.6.94, beating birch tree in area of birch scrub on heathland (TDH). One old, two recent records (HHC).

Trachyphyloeus asperatus Boheman
Watlington Hill, 2.1.94, in moss *Hypnum cupressiforme* in area of rabbit grazed calcareous grassland (TDH). New record (HHC).

Gronops lunatus (Fabr.)
Near Dunsden Green, near Shiplake, 17.4.94, walking on stoney moss covered ground in chalkpit (TDH). One old local, one old non-local record (HHC).

Orthochaetes setiger (Beck)
Watlington Hill, 2.1.94, in moss Hypnum cupressiforme in area of rabbit grazed calcareous grassland (TDH). Only Wellington College, 1916 (HHC).

Amalus scortillum (Herbst.)
Leighton Park School, Reading, 14.6.94, in compost heap in garden (TDH). Two old one recent record (HHC).

Ernoporus fagi (Fabr.)
Leighton Park School, Reading, 14.11.93, in subcortical galleries on small branches on upper part of beech tree which had fallen over on previous day, in parkland (TDH). New record (HHC).

Lampyris noctiluca (L.) **Glow Worm**
Edge of Reading Golf Club adjacent to Kidmore End Road, Emmer Green, at least 9 sightings, the first on 17.6.94 and the last on 21.8.94 (JWM).

***HYMENOPTERA* : SAWFLIES, ICHNEUMONS, ANTS, BEES AND WASPS**

Lasius fuliginosus (Latr.) **The Jet Ant**
Near Coalpit Copse, 16.6.94. A thriving colony of this uncommon ant was discovered during Ken Thomas's walk around Finchampstead Ridges, the nest being deep below the roots of a massive oak tree and thereby difficult of investigation.

Vespa crabo L. **The Hornet**
St. Peter's Avenue, Caversham, 9.8.94. The Recorder was phoned by the owner of a property which had a large garden with a sheltered southern aspect. She suspected that several insects which had been observed at flowers of *Symphoricarpos* were hornets and this proved to be a correct identification. We observed flight lines coming from the general direction of St. Peter's Church, possibly the location of the nest

Dolichovespula media (Retz.) **Tree Wasp**
164 Kidmore End Road, Emmer Green, about a dozen on the trunk of an elm, apparently attracted to sap runs from the damaged trunk (JWM).

***DIPTERA* : TRUE FLIES**

Episyrphus balteatus (Degeer)
Hargrave Road, Maidenhead, 30.7.94, 7.8.94 (MVA).

Scaeva pyrastri (L.)
Hargrave Road, Maidenhead, 30.7.94 (MVA).

Syrphus vitripennis Meigen
Hargrave Road, Maidenhead, 30.7.94

Volucella inanis (L.)
Hargrave Road, Maidenhead, 7.8.94 (MVA).

CONTRIBUTORS

The Recorder expresses his appreciation to the following for their contributions:-

Martin Albertini	(MVA)	David Notton	(DGN)
Hugh Carter	(HHC)	John Notton	(JHFN)
Nigel Cleere	(NC)	Christopher Raper	(CMR)
Graham Dennis	(GJD)	Des Sussex	(DJS)
Thomas Harrison	(TDH)	David Young	(DAY)
John Marshall	(JWM)		

We thank John and Brenda Marshall for allowing their garden to be used for our 28th. Annual Mothing Night and John and David Notton for helping to record the 60 species seen on that enjoyable occasion.

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RECORDER'S REPORT FOR INVERTEBRATES OTHER THAN INSECTS

Hugh H. Carter

Salticus scenicus (Clerck) **Jumping Spider**
Common as ever at 10 Northbrook Road.

Pisaura mirabilis (Clerck) **Tent Spider**
1 at 301 Northumberland Avenue, Whitley Wood, 5.6.93.

Nuctanea umbratica Clerck
Female on fence beside pond at By Pond Cottage, Binfield Heath, (SU743792), 20.3.93.

Araneus diadematus Clerck **Garden Spider**
Common as ever at 10 Northbrook Road. A fine female at entrance to house in Galsworthy Drive, Caversham Park.

THE RECORDER'S REPORT FOR VERTEBRATES

Hugh H. Carter

FISH

Leuciscus cephalus (L.) **Chub**
1 about 240 mm long in Holy Brook at Central Library, 7.6.94, 1 about 200 mm long there, 16.6.93. About 20 in Emm Brook, Dinton Pastures, up to 350mm long, 27.6.94.

Perca fluviatilis L. **Perch**
1 taken by angler at Kennet Mouth, 27.7.94.

AMPHIBIANS

Rana temporaria L. **Frog**
Spawn and about 60 adults at Emmer Green, 15.2.94 (JM). Spawn in Reading and Spencer's Wood, 22.2.94. None in pond at Coach and Horses, 2.3.94. Present in garden pond in Wyfold Lane, 5.4.94 (MR). In garden pond at Netherleigh, Pangbourne, (CF).

Bufo bufo (L.) **Toad**
1 in compost heap at 164 Kidmore End Road, 29.1.94 and 26.6.94 (JM). No toads yet in pond at Coach and Horses, 2.3.94. Juvenile dead in Holyrood Crescent, Caversham Park, 2.7.94, animal 50mm long there, 20.10.94. In garden pond at Netherleigh, Pangbourne, (CF).

Triturus sp. **Newt**
In garden pond at Netherleigh, Pangbourne, male dug up in herbaceous border, September or October 1994 (CF).

REPTILES

Anguis fragilis L **Slow Worm**
Present at Spencer's Wood, 23.2.94 (KT). 1 at Netherleigh, Pangbourne, June 1994 (CF).

Vipera berus L. **Adder**
1 at Decoy Heath, Aldermaston, 6.3.94 (KB).

MAMMALS

Sorex araneus (L.) **Common Shrew**
Nest with young in compost heap at 164 Kidmore End Road (JM). 1 on sports field, Caversham Park, 19.6.94.

Talpa europaea L. **Mole**
Active at Moor Copse, 23.1.94. Active at Twyford 31.1.94.

Erinaceus europaeus L. **Hedgehog**
1 at 164 Kidmore End Road, 30.5.94 (JM). 1 dead on Straight Mile, Hurst, 13.6.94. 1 dead on Lowfield Road, Caversham Park, 23.6.94 and 13.10 94. 1 dead on motorway at Cox Green, Maidenhead, 1.8.94. 1 dead in Tower Close, Emmer Green, 3.8.94. 1 dead on road, Cane End, 5.8.94. Seen on several occasions at 51 Galsworthy Drive, Caversham Park, (DA). 1 seen crossing road in Binfield Heath (JM). 1 dead on Keephatch Lane, Wokingham, 16.11.94.

Pipistrellus pipistrellus (Schreber) **Pipistrelle**
5-6 at Blackhouse Wood north of Emmer Green 4.6.93. Seen at Netherleigh, Pangbourne (CF).

Vulpes vulpes (L.) **Fox**
Droppings at Emmer,Green, 15.2.94 (JM). Signs at Basildon Park, 5.8.94. 2 in garden of 164 Kidmore End Road, 12.1.94, 1 there 30.5.95, 20.6.94 and 21.6.94, cub there 11.7.94. 1 in Chambers Copse, Emmer Green, 26.4.94, 23.5.94 and 28.5.94, 1 with 3 cubs there 5.6.94, 1 there 10.6.94, 11.6.94 and 17.6.94, 1 with a cub, 13.7.94,1with a cub, 9.9.94 (JM) - these are late dates for cubs.

Meles meles (L.) **Badger**
Tracks in Sulham Woods, 23.1.94. Tracks in Blackhouse Wood, Dunsden, 2.3.94. Sett in use, New Copse, Gallowstree Common, 17.6.94. 2 in Chambers Copse, Emmer Green, 22.4.94 and 23.4.94, 1 there 20.5.94 and 28.5.94, 2 there 9.9.94. 1 at 164 Kidmore End Road, 17.10.94 (JM). Male, female, 3 young and 2 juveniles all summer at Netherleigh and in gardens of other houses in Riverview Road, with a sett on waste ground 100m. away; badgers from Bozedown visiting Westfield Lane in Whitchurch; badgers from Sulham Hill visiting Pangbourne itself, not always welcome (CF).

Mustela erminea L. **Stoat**
1 crossing Peppard Road near Abbey Football Ground, 1.10.93.

Mustela erminea L. **Weasel**
2 crossing Straight Mile, Hurst, 13.6.94. 1 on Maidenhead Road, Wokingham, 16.6.94. 1 King's Meadow 16.9.94 (MD). Female dead on Kiln Road, Dunsden, 25.11.94.

Dama dama (L.) **Fallow Deer**
Slots at Sulham Woods, 23.1.94. Slots east of Coach and Horses, 2.3.94. Slots New Copse, Gallowstree Common, 17.6.94. Slot Blackhouse Wood, Dunsden, 10.7.94.

Capreolus capreolus (L.) **Roe Deer**
Slots at Moor Copse, 23.1.94. Doe at Grazeley, 31.7.94. Said to be seen frequently at Bere Court, (CF).

Muntiacus reevesi Ogilby **Muntjac**
At 164 Kidmore End Road, 7.3.94, 10.3.94, 12.3.94, 28.4.94, 26.5.94, 18.8.94, 29.9.94, and 10.12.94. In Chambers Copse, Emmer Green, 6.2.94, 2.3.94, 22.5.94, 20.8.94 and 17.9.94 (JM). 1 dying at roadside in Milestone Wood, Caversham Park, 6.5.94. Slots New Copse, Gallowstree Common, 17.6.94. Droppings at Highmoor Hall, 2.7.94. Seen occasionally at Pangbourne; said to be frequently seen at Bere Court, (CF).

Lepus capensis Pallas **Hare**
1 crossed Binfield Heath Road near Emmer Green / Dunsden border, 24.3.94 (JM).

Oryctolagus cuniculus (L.) **Rabbit**
Droppings at Moor Copse, 23.1.94. Droppings at Twyford, 31.1.94, 3 there 31.12.94. 1 at Blackhouse Wood, 2.3.94 (Recorder) and 18.10.94 (EMC). 1 at Caversham Park Primary School playing field, 7.3.94, 2 there 14.3.94 (EMC), 3 or 4 early June, 1 there 18.6.94, 2 there 19.6.94 and 2.7.94, 3 there 7.7.94, 1 adult and 1 juvenile 11.7.94, 2 adults 19.7.94, 1 there 24.7.94, 3 there 25.7.94, 1 there 7.8.94. 8 at Hardwick Stud, 9.3.94, none on other visits. 3 juveniles by Peppard Road, Chalkhouse Green, 4 there 2.4.94, 1 there 8.5.94. 2 in field by Hazelmore Copse, Kidmore End. Juvenile in Milestone Wood, Caversham Park, 18.4.94, 22.4.94, 2 there 24.4.94, 1 there 27.4.94, 2 there 25.5.94. 2 by New Road, Sonning Eye, 16.5.94. 7 at Dinton Pastures, 27.5.94 (Recorder) and 3 there 16.11.94 (EMC and GM). 10 on Watlington Hill, 28.5.94. 1 at Grazeley, 31.7.94. Signs at Basildon Park, 5.8.94. Numbers generally low this year.

Rattus norvegicus (L.) **Brown Rat**
1 at Caversham Mill, 9.5.94. 1 in Lowfield Road, Caversham Park, 14.9.94 (RD).

Apodemus sylvaticus (L.) **Wood Mouse**
Seen after taking peanuts at 164 Kidmore End Road, (JM). 1 on Balmore Park 9.6.94 (MJC).

Microtus arvensis (L.) **Short-tailed Vole**
1 crossing Straight Mile, Hurst, 27.6.94.

Sciurus carolinensis Gmelin **Grey Squirrel**
1 in Buckingham Drive, Emmer Green, 2.1.94. 1 Emmer Green, 22.1.94 and 4.10.94. 1 Little Heath Road, Tilehurst, 23.1.94. 1 on Caversham Park Primary School playing field, 2.3.94 and 7.3.94. 1 in hedge near Blackhouse Wood, 18.3.94. 1 in Littlestead Lane, 18.3.94 (EMC). 1 in Old Copse, Sonning Common, 28.3.94, 3 there 26.9.94. 1 dead on road, 15.5.94. 1 dead on road, Keephatch Lane, Wokingham, 13.6.94, 1 alive there 16.6.94. 1 Maidenhatch Road, Wokingham, 18.6.94, 1 dead there 11.7.94. 1 at Twyford South Lake, 27.6.94. 1 dead on road, Peppard Hill, 26.10.94. 1 at 42 Southdown Road, Emmer Green, 17.11.94.

Contributors

My thanks are due to the following for their contributions:

Dorothy Abrey	(DA)	Claire Frank	(CF)
Kit Brownlee	(KB)	John Marshall	(JM)
Elizabeth Carter	(EMC)	Graham Murray	(GM)
Mary Carter	(MJC)	Mrs. M. Rowett	(MR)
Margaret Dimmick	(MD)	K. Thomas	(KT)
Robert Dimmick	(RD)		

THE WEATHER AT READING DURING 1994

by

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1994 was a pleasant year weatherwise being winter-less (once again), and giving us an enjoyable hot, dry summer and record-breaking warmth in November. Temperatures over the year averaged 11.0°C, some 1°C above normal (with eight months recording higher than average temperatures), making 1994 the fourth-warmest year since 1959 (after 1990, 11.3°C; 1959, 11.2°C and 1989, 11.2°C). This should not be taken as evidence for the predicted global warming trend and it is worth noting that only 12 years since 1959 have recorded temperatures more than 0.2°C above average (although five of those have been in the last decade). Interestingly, the nights were particularly warm (due to increased cloudiness) and the mean minimum temperature for the year was the highest since 1921.

The annual precipitation aggregate was very close to normal but the individual months showed considerable variation from deluges in January and December (32% and 35% above normal) to dry spells in June and July (45% and 73% below normal rainfall). Sunshine totals were 3% less than normal but this was a huge improvement over the previous two dull years (when sunshine was some 25% below normal). Indeed, two months (June and July) exceeded 200 hours of sunshine (the first time since 1990), compared with four such months in the brilliant summers of 1976 and 1990. In contrast, August, September and November were dreadfully dull.

The following monthly weather summaries are based on the table of weather data provided (Table 1), along with mean values for the station over the period 1971-1990 (Table 2). All these data have been kindly supplied by the Department of Meteorology at Reading University.

January was generally a mild and wet month due to the relentless passage of depressions and Atlantic airstreams. Temperatures were between 1.5°C and 1.8°C above average and indeed the monthly mean (5.8°C) was the eighth-highest recorded since 1960 (but way behind the record 7.1°C monthly mean of January 1975). Soil temperatures were also well above average and, with only five air frosts recorded in the month, the Spring bulbs enjoyed a very early growth. Due to the dominant cyclonic influences, rainfall was 35% above average but despite the associated cloud cover, the number of hours of sunshine recorded was slightly above normal. On the 6th, Reading experienced about two hours of snowfall but escaped the rush hour chaos recorded a few miles to the east and south of us, associated with a deposition of up to 10cm of snow.

February turned out to be a very mixed month with a wet, mild first half followed by a cold, snowy middle part and a mild last few days. Overall, the month recorded temperatures just below average mainly due to the very cold spell between the 13th and 15th (a period of 40 hours below 0°C and an extreme minimum of - 5.2°C). However, this winter blast of the Scandinavian anticyclone (and easterly airflow) was short-lived and temperatures were soon back to normal (with a balmy 12.4°C recorded on the 27th, some 8°C above the monthly average). Precipitation for the month was 23% above normal, making it the second-wettest February since 1977 and the ninth-wettest since 1960. The number of days with snow recorded was the third-highest since 1979. Sunshine hours were about 9% below average, mainly due to the five consecutive sunless days in the last week.

March proved to be a marvellous start to Spring being warm, dry and sunny. Indeed, temperatures were some 2°C above average and maximum temperatures exceeded 12°C on 14 days (with the highest 15.8°C recorded on the 30th). Consequently, the month was the fourth-warmest since 1959 (along with 1991) and was only 0.3°C less than the warmest ever March in 1990. Precipitation was 26% below average and the associated, reduced cloud cover gave total sunshine hours some 13% above the monthly average, to make March the sunniest month at Reading since August 1993. The only atmospheric blemish was the stormy period towards the end of the month with strong west / south-westerly winds taking the edge off the Springtime warmth.

April got off to a wretched start weatherwise with cold, stormy weather and wind gusts up to 60 m.p.h. The disturbed, cyclonic nature of the weather for most of the month was reflected in mean barometric pressure some 4 mb. below normal, with an abnormal low pressure of 973 mb. recorded in the early morning of the 1st. Temperatures remained below average for the first three weeks of the month and by the 21st, it appeared as if we were heading for the coldest April this century. However, the last week or so proved to be very warm with 21.7°C being recorded on the 29th and the minimum temperature on the night of the 28th, (11.8°C) which was the third-highest recorded since 1960. Aggregate rainfall was just below normal although 75% of the rain was deposited in the first nine days of the month. Sunshine totals were also just (2 hours) below normal since the 7 consecutive rainy/cloudy days were counteracted by the same number of dry/clear days.

May proved to be a very poor late-Spring month and the preponderance of depressions kept the weather cool, wet and very dull. The month started off well, continuing the warm, dry spell of the end of April but temperatures soon deteriorated as the cyclonic weather set in. Monthly mean temperatures were some 1°C below normal and the month turned out to be the first May since 1972 when the maximum temperature failed to reach 20°C. Following a `run' of six consecutive dry Mays, it was almost inevitable that we were due for a wet month. This proved to be the case with rainfall some 39% above average, making it the wettest May in a decade and the tenth-wettest since 1960 (with 1967 providing the wettest, with 113mm deposition). The sunny start to the month soon gave way to dull cyclonic conditions, with the highest number of sun-less days in a decade (8). The depressing month turned out to be the fourth-dullest since 1956, receiving only 73% of the average sunshine hours (and only 29% of the possible maximum total).

June soon made up for the wretched May when, after an indifferent first week, anticyclonic conditions soon prevailed. Indeed, the monthly pressure was some 2 mb. above average, with the 1033.7 mb. reading on the 12th being the highest for any day in June since 1973 (which was only 0.1 mb. higher). Consequently, the month was warm, very sunny and dry to provide perfect early Summer weather. Although there were no record temperatures observed, maxima exceeded 22°C on 11 occasions and the 27.8°C maximum recorded on the 24th was the highest temperature for any day of the year since June 1992. Interestingly, the clear nights caused grass minimum temperatures to be the lowest since 1978 and the five recorded ground frosts provided problems for local gardeners. After a rather wet first week, the month became very dry and, overall, total rainfall was only 46% of the average total making it the fifth-driest since 1971 (with 1975 the driest June, with only 7.9mm rainfall observed). There were 11 consecutive dry days in mid month and the only true wet day occurred with a spectacular thunderstorm on the 24th, with 8.8mm rainfall deposited which was almost 37% of the month's total. Sunshine was the outstanding feature of the month (27% above average), averaging 8 hours per day to represent nearly 50% of the total possible (the tenth-sunniest June since 1956, (but 67 hours less than the sunniest in 1975). Wind speeds were the lowest recorded since 1970.

July was a glorious month, with a continuation of June's anticyclonic weather to give very warm, dry, calm and sunny conditions. Temperatures remained high throughout the month with a maximum of 31.0°C recorded on the 12th and 24th, the highest since 1990. Mean temperatures were up to 2.8°C above normal and the mean of 19.3°C was the highest since July 1989 and the fourth-highest since 1959 (when the July mean reached 20.6°C). Lack of rainfall proved to be the main feature of the month, with the aggregate (some 73% below normal) being the sixth-lowest since July 1921. A drought lasting 18 days was recorded from the 9th to 26th inclusive, with considerable stress for gardens and wildlife. The month was sunny throughout (14% above average) and recorded the tenth-highest number of hours since 1956. As in June, the anticyclonic conditions gave wind speeds which were the lowest recorded since 1968.

August proved to be a mixed month, when the warm July weather continued for the first nine days, with maxima exceeding 22°C on each day (and the highest maximum 28.9°C recorded on the 3rd), and high night-time temperatures. Thereafter, temperatures were generally just below average so that overall, the month's mean temperatures were only just above normal (between 0.2 and 0.6°C higher). Rainfall was below average for the third month running (this time by almost 25%). However, it is worth noting that 28% of the month's aggregate was deposited on the last day of the month (following an unusually dry Bank Holiday). Without this final day's rainfall, the month would have been the seventh-driest since 1921 and not the twelfth-driest as it ended up. Sunshine was disappointingly 12% below average, with a pathetic 5.4 hours per day which represented only 37.5% of the maximum possible - a

pretty poor record for Summer. For the third month in a row, wind speeds were the lowest for the last 24 years or so.

September experienced mostly cyclonic weather with Atlantic disturbances and westerly winds dominating the first three weeks of the month. Indeed, barometric pressure was 4 mb. below average (as in April) despite the return to anticyclonic conditions during the last week. Temperatures were variable, with the mean maxima 1.7°C below average whereas warmer nights gave mean minima 0.6°C above average. The overall mean temperature was 0.5°C below average, mainly due to the cold spell mid month, which made it the eighth-lowest since 1960. Rainfall was close to average with the wet first three weeks being replaced by a dry last week. Sunshine was 35% below normal, making it the second-dullest September since 1956 (after the 86 hours of sunshine in 1993, to give us two sun-less September's running). Ironically, most of the sunshine was recorded during the early cyclonic weather i.e. 12 hours on the 2nd, which represented the second-highest daily total recorded since 1956. The anticyclonic gloom of the last week of September (due to a westerly, maritime airflow) gave virtually sun-less conditions (i.e. only about 6 hours sunshine over 8 days!). Overall, sunshine averaged a meagre 3 hours per day, which gave us a pathetic 25% of the maximum possible - a depressing record for early Autumn.

October continued the previous month's anticyclonic weather (without the westerly airflow's gloom, for a welcomed change) until well past the middle of the month. Indeed, sunny, dry and calm conditions dominated the weather at this time, which came to an abrupt end on the 19th, when unsettled cyclonic conditions returned. Overall, temperatures were close to normal and even though the month's rainfall was 20% above normal, most of this rainfall was deposited in the last thirteen days of the month (especially on the 24th and 30th). The small amount of rainfall on the first 18 days (3.2mm) made it the driest start for any October since 1978, and drought was declared with 16 consecutive rain-less days. The month was very sunny with the total sunshine hours recorded some 34% above average, the highest total since 1971 (and the fourth-highest since 1956). Like June, July and August, wind speeds were the lowest recorded over the last 24 years.

November was dominated by balmy south/south-westerly winds which produced record warmth, especially at night with the mean minimum temperatures almost 5°C above normal. The monthly mean temperature was 3.8°C above average, which made it the highest recorded since records began in 1921 (and probably the warmest November in central England for 300 years, according to Media reports). The previous highest was recorded in 1938 which was 1°C below this November's mean. Consequently, no air frosts occurred (for the first November in a decade) and the number of ground frosts (5) was the lowest since 1964. As readers will remember, local gardens flourished at this time and the author picked his last bowl of raspberries mid-month! Rainfall ended up a little (5%) below normal mainly because the anticyclonic dry spell of the last ten days of the month counteracted the very wet, cyclonic first half (with 22.5mm recorded on the 4th, the wettest November day since 1983). The month was disappointingly dull, with sunshine almost 35% below normal, which represented a mere hour per day and a pathetic 13% of the total possible. As we saw in September, most of the sunshine occurred during the early to mid-month cyclonic weather, with 33.5 hours recorded up to the 17th. For the rest of the month, high-pressure stability and a maritime airflow produced the dreaded anticyclonic gloom which allowed only 1.1 hours of sunshine over the next 13 days. Consequently, the month was the dullest since 1962 (when our records began) and the third-dullest since 1939 (using the 'old' Sutton's Seeds Trial Station's records), after 1962 and 1945.

December continued the previous month's unseasonal warmth, with temperatures well above normal. The mean temperature turned out to be the eighth-highest since 1921 but fell short of the 1934 record (8.5°C) due to the cold spell just before Christmas. Indeed, maximum temperatures exceeded 14°C on four occasions, with the highest value on the 10th (14.8°C), which was the warmest December day in almost a decade. The first air frost of the Winter occurred on the 15th (-3.6°C) which is the latest an air frost has been recorded at Reading since 1953 (21st). It was a wet month (29% above average), with most precipitation falling in the first and last week of the month (with eight dry days observed between the 9th and 16th). The first snow of the Winter (a mere trace!) was recorded on the evening of the 23rd and Christmas eve was characterised by quite treacherous freezing fog. Christmas day saw the start of a mild, wet spell which lasted until New Year's Eve (with a maximum temperature of 13.9°C, an amazing minimum temperature of 12.0°C and 11.8mm rainfall all recorded on the 28th).

Postscript

It is useful to summarise the 1994 weather at Reading with a brief look at the seasonal trends indicated in Table 3 (again based on data supplied by the Department of Meteorology).

Winter was indeed truly winter-less, the result of persistent Atlantic depressions and mild maritime airflows. Temperatures were 0.7^{0}C above normal, making it the eighth-mildest winter since 1960/61, but some way (1.7^{0}C) behind the mildest of 1989/90. The number of air frosts was 30% below the seasonal average due to the disturbed cyclonic weather, which was also responsible for precipitation some 32% above the seasonal average (i.e. the sixth-wettest since 1960/61, with 1989/90 the wettest of all with a remarkable 344.6mm, more than double the amount expected). Sunshine hours were very close to normal although the number of sunless days was one-third less than the seasonal average.

Spring was somewhat disappointing since its unseasonal warmth (the fourth-warmest since 1968) was combined with wet and dull conditions. In particular, night-time temperatures were well above average (some 1.4^{0}C) since the prevalent cyclonic weather produced cloudy nights and a record-low number of air frosts (the lowest number since before 1950), which helped early planting in Reading's gardens. A very wet May was responsible for rainfall just above the seasonal average, together with depressingly dull weather and the number of sunless days some 80% above the Springtime normal.

Summer was truly glorious in that it was warmer, drier and sunnier than normal and indeed can be classed above average in every respect. It turned out to be the seventh-hottest summer since 1950, but someway (1.3^{0}C) behind the heatwave of 1976. Interestingly, clear nights in June almost doubled the number of ground frosts (compared with normal), which caused problems for local gardeners. Summer rainfall was almost 50% less than normal and the season proved to be the third-driest since 1921 (after 1955 and 1990), causing stress for gardens and wildlife. It is worth noting that 15% of the season's rainfall was deposited on the 31st August and only 4mm less rainfall on that day would have resulted in this summer being the driest since 1921! Sunshine was some 9% above average, but August was rather dull to spoil this record. Consequently, it turned out to be the tenth sunniest summer since 1956, but someway behind the two best, namely 1976 (842.9 hours) and 1959 (808.2 hours).

Autumn failed to give us the hoped-for `Indian Summer' weather for, despite the welcomed warmth and continued garden growth (especially in November), it was generally a wet and dull season. Cloudy nights were responsible for minimum temperatures close to 2^{0}C above the seasonal average. Consequently, Autumn remained air frost-free which was the first time this has happened since 1986 and only the third time since 1950 (the other being Autumn 1958). Rainfall was close to average (some 7% higher), mainly due to a very wet last week in October. The associated cloud cover was responsible for sunshine some 18% less than normal (despite a very sunny October), and the number of sunless days (62% above average) was the highest since the Autumn of 1963. As a result, it was the sixth-dullest Autumn since 1956, with only 13 hours more sunshine recorded than the dullest in 1976.

Table 1 Weather Records: 1994

Station: Reading University (Whiteknights)

		Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov..	Dec.	Year
Mean Daily Temperatures °C	Max.	8.8	7.1	11.6	12.3	15.2	20.1	24.7	21.6	16.7	14.8	13.0	10.0	14.7
	Min.	2.8	1.1	5.2	4.8	7.6	10.4	13.8	12.5	10.3	6.8	8.4	3.7	7.3
	Mean	5.8	4.1	8.4	8.6	11.4	15.3	19.3	17.1	13.5	10.8	10.7	6.9	11.0
	Range	6.0	6.0	6.4	7.5	7.6	9.7	10.9	9.1	6.4	8.0	4.6	6.3	7.4
Extreme Temperatures °C	Extreme Max.	12.5	12.4	15.8	21.7	19.7	27.8	31.0	28.9	21.0	18.2	16.9	14.8	31.0
	Date	12th	27th	30th	29th	31st	24th	12/24	3rd	2nd	10th	3rd	10th	12,24/7
	Extreme Min.	- 1.9	- 5.2	- 0.7	0.5	2.6	4.6	9.3	7.2	5.4	1.1	1.9	- 5.4	- 5.4
	Date	9th	15th	20th	3rd	29th	1st	11th	15th	18th	3rd	2nd	24th	24/12
	Extreme Grass Min.	- 7.1	- 9.8	- 5.9	- 5.2	- 4.5	- 3.5	2.6	- 1.2	- 1.0	- 8.0	- 3.0	- 9.5	- 9.8
	Date	1st	21st	20th	12th	30th	1st	29th	24th	17th	18th	2nd	23rd	21/2
Days with air frost		5	10	1	0	0	0	0	0	0	0	0	6	22
Days with ground frost		21	19	15	15	7	5	0	2	1	14	5	18	122
Hours at or below 0.0°C		6.0	92.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	174.0
Sunshine Hours	Sum	62.5	62.9	120.6	153.7	140.5	239.1	235.2	169.1	93.8	129.9	34.6	47.6	1489
	% of possible	23.5	22.4	32.8	37.0	29.2	48.4	47.3	37.5	24.7	39.0	12.8	19.2	33.2
	Daily Mean	2.0	2.2	3.9	5.1	4.5	7.9	7.5	5.4	3.1	4.2	1.1	1.5	4.0
Precipitation	Amount in mm	79.1	50.6	40.1	39.6	70.8	23.8	10.9	39.6	54.8	73.0	51.1	83.2	616.6
	Rain Days	20	13	18	15	15	8	7	8	14	12	11	14	160
Maximum rain in one day	"	12.0	9.6	8.4	7.9	12.0	9.7	6.2	11.1	11.4	20.0	22.5	12.7	22.5
	Date	9th	22nd	31st	3rd	14th	4th	7th	31st	15th	30th	4th	8th	4/11
Longest run of consecutive rain days		7	3	6	7	4	3	3	4	3	4	3	6	7 Jan; Apr.
Longest run of consecutive dry days		3	6	3	7	5	11	18	5	5	16	10	6	18 July
Snow or sleet days		1	6	0	1	0	0	0	0	0	0	0	1	9
Days with snow lying		0	2	0	0	0	0	0	0	0	0	0	1	3
Visibility	Days with fog at 0900 GMT	0	4	0	0	0	0	0	0	1	3	3	3	14
Thunderstorm Activity	Days of thunder	0	0	0	1	0	2	0	2	1	1	0	0	7
	Days of hail	1	0	2	4	1	0	0	0	0	0	0	1	9
Barometric Pressure mb	Mean	1010.0	1011.6	1015.6	1012.5	1013.3	1018.7	1017.6	1014.5	1012.9	1013.1	1017.0	1015.1	1014.3
	Highest	1030.4	1026.6	1030.9	1029.8	1030.2	1033.7	1022.9	1025.2	1026.5	1034.7	1037.1	1037.4	1037.4
	Date	29th	12th	10th	28th	1st	12th	16th	15th	18th	6th	25th	23rd	23/12
	Lowest	977.4	989.2	996.2	985.1	998.0	1002.8	1007.2	1004.6	996.7	986.8	1001.1	987.3	977.4
	Date	6th	3rd	31st	1st	21st	3rd	31st	10th	15th	23rd	9th	30th	6/1

Table 2 Monthly and Annual Weather Averages

Reading University (Whiteknights)

1971 - 1990

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
MEAN BAROMETRIC PRESSURE	1014.2	1015.2	1014.0	1015.8	1014.9	1016.5	1017.2	1016.6	1017.0	1015.2	1015.9	1015.0	1015.7
MEAN TEMPERATURE	4.2	4.2	6.3	8.2	11.6	14.5	17.0	16.7	14.0	10.8	6.9	5.5	10.0
MEAN MAXIMUM TEMP.	7.0	7.3	9.8	12.4	16.2	19.1	21.9	21.4	18.4	14.5	10.1	8.2	13.9
MEAN MINIMUM TEMP.	1.3	1.2	2.6	4.0	7.0	9.9	12.2	11.9	9.7	7.1	3.7	2.7	6.1
DAILY RANGE TEMP.	5.7	6.1	7.2	8.5	9.1	9.2	9.7	9.6	8.8	7.4	6.1	5.5	7.8
SOIL TEMP. 5cm	3.1	2.9	5.1	8.8	13.6	17.2	19.3	18.1	14.5	10.1	5.9	4.2	10.2
" " 10cm	3.3	3.1	4.9	8.0	12.4	15.9	18.1	17.1	13.9	10.0	6.1	4.5	9.8
" " 20cm	4.0	3.9	5.3	7.9	11.8	15.1	17.5	17.0	14.3	10.8	7.1	5.2	10.0
" " 30cm	5.0	4.7	6.1	8.4	11.7	14.8	17.0	16.9	14.8	11.9	8.4	6.2	10.5
" " 50cm	5.5	5.2	6.3	8.4	11.4	14.4	16.5	16.8	15.1	12.4	9.2	6.8	10.7
" " 100cm	6.6	5.9	6.4	8.0	10.5	13.1	15.1	15.9	15.0	13.0	10.5	7.9	10.7
AGGREGATE RAINFALL (mm)	58.6	41.3	54.5	41.1	50.9	51.9	40.6	52.6	52.1	60.8	53.6	64.4	622.3
RAIN DAYS (0.2mm or MORE)	16	13	16	13	14	11	11	11	10	14	13	15	157
WET DAYS (1.0mm or MORE)	11	8	12	9	10	9	7	8	8	10	9	9	112
SUNSHINE (No. of HOURS)	55.9	69.3	106.3	155.6	193.4	189.0	206.5	193.0	144.5	97.1	71.9	48.7	1531.2
MEAN DURATION	1.80	2.48	3.43	5.19	6.24	6.30	6.66	6.23	4.82	3.13	2.40	1.57	4.19
DAILY MEAN DURATION POSSIBLE AT LATITUDE 51°	8.51	10.05	11.86	13.83	15.51	16.45	16.03	14.53	12.65	10.73	8.97	8.04	12.27

Table 3 Seasonal Weather Data for Reading

A) Winter (Dec., Jan., Feb.)

	1993/94	1971/90
Mean barometric pressure:	1009.1 mb	1014.8 mb
Mean temperature:	5.3°C	4.6°C
Mean maximum temperature:	8.2°C	7.5°C
Mean minimum temperature:	2.4°C	1.7°C
Number of air frosts:	21	30
Number of ground frosts:	58	60
Aggregate precipitation:	216.6 mm	164.3 mm
Number of rain days:	58	44
Hours of sunshine:	175.0	173.9
Number of sunless days:	22	33

B) Spring (Mar., April, May.)

	1994	1971/90
Mean barometric pressure:	1013.8 mb	1014.9 mb
Mean temperature:	9.5°C	8.7°C
Mean maximum temperature:	13.0°C	12.8°C
Mean minimum temperature:	5.9°C	4.5°C
Number of air frosts:	1	10
Number of ground frosts:	37	42
Aggregate precipitation:	150.5 mm	146.5 mm
Number of rain days:	48	43
Hours of sunshine:	414.8	455.3
Number of sunless days:	18	10

C) Summer (June., July, Aug.)

	1994	1971/90
Mean barometric pressure:	1016.9 mb	1016.8 mb
Mean temperature:	17.2°C	16.1°C
Mean maximum temperature:	22.1°C	20.8°C
Mean minimum temperature:	12.2°C	11.3°C
Number of air frosts:	0	0
Number of ground frosts:	7	4
Aggregate precipitation:	74.3 mm	145.1 mm
Number of rain days:	28	33
Hours of sunshine:	643.4	588.3
Number of sunless days:	5	5

D) Autumn (Sept., Oct., Nov.)

	1994	1971/90
Mean barometric pressure:	1014.3 mb	1016.0 mb
Mean temperature:	11.7°C	10.6°C
Mean maximum temperature:	14.8°C	14.3°C
Mean minimum temperature:	8.5°C	6.8°C
Number of air frosts:	0	6
Number of ground frosts:	20	29
Aggregate precipitation:	178.9 mm	166.5 mm
Number of rain days:	37	37
Hours of sunshine:	258.3	313.5
Number of sunless days:	26	16